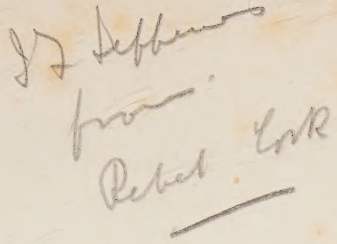

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DISEASES OF WOMEN

A CLINICAL GUIDE

TO THEIR

DIAGNOSIS AND TREATMENT

BY

GEORGE ERNEST HERMAN

M.B.Lond., F.R.C.P.

CONSULTING OBSTETRIC PHYSICIAN TO THE LONDON HOSPITAL
CONSULTING PHYSICIAN-ACCOUCHEUR TO THE TOWER HAMLETS DISPENSARY
LATE PRESIDENT OF THE OBSTETRICAL SOCIETY OF LONDON AND OF THE HUNTERIAN SOCIETY
FORMERLY PHYSICIAN TO THE GENERAL LYING-IN HOSPITAL AND TO THE EASTERN DISTRICT OF THE ROYAL MATERNITY CHARITY, AND EXAMINER IN MIDWIFERY TO THE UNIVERSITIES OF LONDON, OXFORD, CAMBRIDGE, DURHAM, AND THE VICTORIA UNIVERSITY, THE ROYAL COLLEGE OF PHYSICIANS AND THE ROYAL COLLEGE OF SURGEONS

WITH 265 ILLUSTRATIONS

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To the Memory of

JAMES MATTHEWS DUNCAN

AND

HENRY GAWEN SUTTON

TO WHOSE TEACHING

WHATEVER IS GOOD IN THIS BOOK

IS MAINLY DUE.

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PREFACE TO THE THIRD EDITION.

This New Edition has been revised throughout. I have modified it in accordance with what seemed to me the more important additions to our knowledge and changes in practice. I have endeavoured to put before the reader the modern conception of hysteria as a disease characterised by definite physical signs. Though this is not a book on histology, yet it seemed to me that the student might reasonably expect to find in it some information upon so important a subject as the microscopic appearances of uterine cancer. I have therefore inserted a brief account of this with illustrations. Thanks to the great monograph of Dr. Teacher, I have been able to give a fuller and better description of chorion-epithelioma. The investigations of Drs. Herbert Williamson and Atlee into the nature of urethral caruncles have enabled me to state more about these curious growths. The pages descriptive of abdominal hysterectomy have been, I hope, brought into accord with the practice of to-day. These, though not all, are the chief alterations, and I hope that the book may still be found a trustworthy guide in practice.

G. E. H.

March, 1907.

PREFACE TO THE ORIGINAL EDITION

I HAVE written this book because it seemed to me that a book was wanted which should guide the student and practitioner to the diagnosis and right treatment of the diseases of women. I have tried to present the different diseases which affect the organs peculiar to women in the way in which they appear in practice. I have not sought to quote everything that has been recommended, but to state principles, and in applying those principles to recommend that which, having tried it, I know to be good. I may plead that I have one qualification for writing such a book, not always possessed by the authors of text-books—namely, clinical experience.

G. E. H.

CONTENTS.

Part I.

GENERAL.

CHAPTER.		PAGE
I.	Introductory	1
II.	Neurasthenia	10
III.	Hysteria	29
IV.	Headaches	37
V.	Pain in the Back	44
VI.	Chronic Abdominal Pain	53
VII.	Method of Investigation	59

Part II.

CHRONIC PELVIC PAIN.

VIII.	So-called Chronic Ovarian Pain; or Chronic Oöphoritis	69
IX.	Chronic Uterine Pain; Subinvolution and Chronic Metritis	88
X.	Uterine Displacements. I.—Prolapse	107
XI.	Uterine Displacements. II.—Retroflexion	150
XII.	Conditions Resembling Prolapse	172

Part III.

PELVIC INFLAMMATIONS.

XIII.	Acute General Peritonitis	185
XIV.	Perimetritis	194
XV.	Serous Perimetritis	202
XVI.	Perimetric Abscess	207
XVII.	Salpingo-oöphoritis	215
XVIII.	Parametritis	260

Part IV.

INTERNAL HÆMORRHAGE.

XIX.	Great Internal Hæmorrhage	290
XX.	Pelvic Hæmatocele	307

Part V.

HÆMORRHAGE.

XXI.	General Considerations as to Uterine Hæmorrhage	320
XXII.	Hæmorrhage without Evidence of Pregnancy or New Growth	322
XXIII.	Hæmorrhage with a Rounded Tumour in Vagina	329
XXIV.	Hæmorrhage connected with Early Pregnancy	341
XXV.	Adenoma of the Uterine Body	354
XXVI.	Cancer of the Cervix	360
XXVII.	Malignant Diseases of the Uterine Body	400
XXVIII.	Bleeding Fibroids	416

Part VI.

LEUCORRHŒA.

CHAPTER. PAGE

XXIX.—General Considerations as to Leucorrhœa . . 434
XXX.—Leucorrhœa in Children 436
XXXI.—Leucorrhœa in Virgins 440
XXXII.—Leucorrhœa in Married Women 443
XXXIII.—Leucorrhœa in Old Women 473

Part VII.

DISORDERS OF THE VULVA.

XXXIV.—Pruritus Vulvæ 477
XXXV.—Inflammations and Ulcerations of the Vulva . . 484
XXXVI.—Swellings of the Vulva 506

Part VIII.

DISORDERS OF MENSTRUATION.

XXXVII.—Menstruation 523
XXXVIII.—Dysmenorrhœa 531
XXXIX.—Obstructive Dysmenorrhœa 533
XL.—Membranous Dysmenorrhœa 536
XLI.—Spasmodic Dysmenorrhœa 545
XLII.—Congestive Dysmenorrhœa 559
XLIII.—Other Kinds of Menstrual Pain 566
XLIV.—Amenorrhœa—Menstruation suppressed . . . 569
XLV.—Amenorrhœa—Menses retained 603
XLVI.—Amenorrhœa—Menstruation absent . . . 614

Part IX.

DISORDERS OF THE SEXUAL FUNCTIONS.

XLVII.—Sexual Troubles 627
XLVIII.—Sterility 641

Part X.

DISORDERS OF PARTS ADJACENT TO THE SEXUAL ORGANS.

XLIX.—Too Frequent Micturition 653
L.—Painful Micturition 663
LI.—Retention of Urine 689
LII.—Incontinence of Urine 696
LIII.—Painful Defæcation 714
LIV.—Incontinence of Fæces 722

Part XI.

ABDOMINAL TUMOURS.

LV.—Ovarian Tumours 731
LVI.—Clinical History of Ovarian Tumours . . . 771
LVII.—The Diagnosis of Ovarian Tumours . . . 777
LVIII.—Ovariotomy 800
LIX.—After-risks of Ovariotomy 823
LX.—Solid Abdominal Tumours 833
LXI.—The Treatment of Subperitoneal Fibroids . . 847
LXII.—Ectopic and complicated Pregnancy . . . 859
LXIII. Inguinal Swellings 875
Index 883

LIST OF ILLUSTRATIONS.

PAGE

Bimanual Examination 61
Fergusson's Speculum 62
Nest of Celluloid Specula 62
Speculum Forceps 62
Neugebauer's Speculum modified by Barnes—the "Crescent" Speculum . 63
Roper's Modification of Barnes's "Crescent" Speculum . . . 64
Sims's "Duckbill" Speculum 64
Position of Patient for Examination with "Duckbill" Speculum . . 65
Volsella 66
Tenaculum 66
Uterine Sound 66
Bimanual Rectal Examination 67
Combined Rectal and Vaginal Examination 67
Situation of Superficial Tenderness accompanying Ovarian Pain . . 74
Virgin Uterus—Anterior Aspect; Median Section; Transverse Section . 88
Multiparous Uterus—Anterior Aspect; Uterine Cavity . . . 89
Diagram showing the Difference between the Normal Uterus and one enlarged from Subinvolution 100
Diagram illustrating Structure of Pelvic Floor 108
Levator Ani 109
Diagram showing Normal Descent of Pelvic Floor, Descent of Uterus, and Shortening of Vagina during Effort 114
Diagram showing Descent of Pelvic Floor without Relative Displacement of Uterus 115
Perineal Support 117
Cystocele and Rectocele 118
Uterus dragged down by a Tumour 119
Hewitt's "Cradle" Pessary 120
"Cradle" Pessary in position 121
Descent of Pelvic Floor, with Slight (First Degree of) Prolapse . . 122
Showing Second Degree of Prolapse; Elongation of Cervix and Body of Uterus; Swelling of Part outside Vulva; Cystocele . . . 123
Second Degree of Prolapse, with Elongation of Cervix and Great Swelling of Part outside Vulva 124
Showing Great Elongation of Supra-vaginal Cervix . . . 125
Elongation of Infra-vaginal Portion of Anterior Wall of Cervix and of Supra-vaginal Portion of Posterior Wall 126
Third Degree of Prolapse; Uterus completely outside Vulva; Vagina completely Inverted 127
Diagram showing Final Stage of Prolapse: Vagina turned inside out, forming a Bag, at the Bottom of which lies the Uterus Retroverted 128
Hypertrophy of Infra-vaginal Cervix 129
Ring Pessary 131
Hodge's Pessary 131

PAGE

Modification of Hodge's Pessary, advised by Author . . . 131
Average Conformation of parts at Vaginal Orifice 132
Occasional Conformation of parts at Vaginal Orifice: Perineum extending forwards to Symphysis. 133
Occasional Conformation of parts at Vaginal Orifice: Fourchette two inches behind Symphysis 134
One form of Zwancke's Pessary: Metal Screw 135
Another form of Zwancke's Pessary: Vulcanite Screw . . . 135
Another form of Zwancke's Pessary: Fastened with Clip . . . 135
Cup and Stem Pessary, as made of Guttapercha 136
Aitken's Porcelain Stem 136
Hughes-Davies's Pessary 137
Cutter's Pessary, with Cup 137
Cutter's Pessary, with Loop 137
Clover's Crutch 139
Toothed Dissecting Forceps 140
Anterior Colporrhaphy 141
Posterior Colporrhaphy 142
Ventral Fixation: Diagram showing Uterine Stitches . . . 146
Ventral Fixation: Diagram showing Stitches Tied 146
Showing Blood Supply of Uterus 151
Diagnosis of Retroflexion by the Sound, which enters with the Concavity Backwards 153
Retro-cervical Swelling formed by Fibroid in Posterior Uterine Wall, and feeling like Retroflexion 154
Showing occasional Vicious Action of Hodge's Pessary . . . 155
Patient in Knee-elbow Position 157
Hodge's Pessary Anteverting Uterus 158
Ring Pessary Anteverting Uterus 159
Ring Pessary, with Fluid in its Interior 159
Hodge's Pessary Supporting but not Anteverting the Uterus . . 161
Vaginal Fixation: Stitches in Position before Tying . . . 166
Hypertrophy of Infra-vaginal Cervix 173
Needle-holder 174
Diagram of Cervix Stitched as described 175
Diagram showing Fœtal Structures out of which Cysts may develop . 178
Diagram showing Ducts of Müller 179
Diagram showing Formation of Uterus and Vagina by Fusion of Ducts of Müller 179
Unilateral Hæmatocolpos 180
Mode of Stitching after Removal of Free Part of Vaginal Cyst . . 182
Uterus dragged down by a Tumour growing from the Cervix Uteri and adjoining part of Vagina 183
Perimetric Effusion in front of and above Uterus 203
Tubercular Disease of Fallopian Tube and Ovary 220
Diagram illustrating Salpingitis: Right Tube Thickened and Closed . 227
Diagram illustrating Salpingitis: Right Tube Thickened, Dilated, Lengthened, Tortuous, Adherent to Ovary and Pelvic Wall; Left Tube Thickened and Adherent to Ovary 227
Diagram illustrating Salpingitis: both Tubes Thickened, Closed, Tortuous, Adherent to one another, to Uterus, and to Pelvic Wall . . 228
Large Pyo-salpinx 230
Hydro-salpinx 232

PAGE

Hydro-salpinx 233
Showing Suppurated Ovary associated with Salpingitis . . . 237
Application of Presssure Forceps in Removal of Uterus and its Appendages by the Vagina 256
Muscular Structure of Pelvic Floor 261
Section showing Cellular Tissue in Broad Ligaments . . . 262
Horizontal Section of Pelvis at Level of Internal Os . . . 263
Section above Brim of Pelvis 264
Diagram to illustrate the Beginning of Puerperal Parametritis . . 269
Diagram to illustrate the Mode of Extension of Puerperal Parametritis . 269
Diagram to show the Situation of Puerperal Parametritis . . . 270
Horizontal Section through Pelvic Cavity 274
Showing Cellular Tissue extending back to Sciatic Notch . . . 276
Section through Pelvis near Outlet, showing Continuity of Cellular Tissue within Pelvis, through Sacro-sciatic Notch, with that outside it . 277
Section through Pelvis of Puerperal Woman in Sagittal Plane . . 283
Suppurated Anterior Parametritis 284
Tubal Gestation and Rupture 293
Interstitial Hæmorrhage into Ovary. 301
Diagram illustrating Rupture of Interstitial Pregnancy . . . 302
Case of Interstitial Pregnancy 303
Case of Interstitial Pregnancy 304
Pregnancy in a Rudimentary Uterine Cornu 305
Diagram illustrating Process of Tubal Abortion 308
Tubal Mole, External Aspect 308
Tubal Mole on Section 309
Tubal Mole on Section 310
Diagram illustrating Modes of Rupture of Fallopian Tube . . 317
Polypus Uteri 329
Successive Stages in the Production of Inversion of the Uterus . . 330
Inversion of the Uterus 331
Inversion of Uterus on Section 332
Aveling's Repositor for Inversion of the Uterus 333
Hegar's Dilators 344
Laminaria Tents 346
Small Portions of a Villus showing Origin of Tumour from the Epithelium 350
Typical Masses of Chorion-epithelioma invading the Uterine Muscle . 351
Uterine Blood Vessel invaded by Tumour 352
Curette recommended by the Author 358
Malignant Adenoma highly magnified 361
Pavement Epithelioma of Vaginal Portion 362
Carcinoma of Vaginal Portion 363
Adeno-carcinoma of the Cervix 364
Cancer of Vaginal Portion 365
Cancer of Vaginal Portion, from Below and on Section . . . 365
Cancer of the Cervix, from Below and on Section 366
Cancer that has destroyed the Cervix and is invading the Body of the Uterus 368
Showing great Enlargement from Cancer of the Cervix and Lower Part of the Body of the Uterus 369
Cancer that has perforated the Bladder 372

PAGE

Sharp Spoon 386
First Step in Hysterectomy: division of Vagina round Cervix . . 387
Separation of Bladder and Ureter from Cervix 388
Doyen's Angiotribe 389
Hemisection of Uterus commenced 390
Hemisection of Uterus in Progress 391
Uterus brought outside 392
Corroding Ulcer 397
Cancer of Uterine Body 401
Cancer of Uterine Body 403
Cancer, with great Enlargement of Uterine Body 404
Cancer of Uterine Body, enlarging it 405
"Erectile Tumour" (probably Sarcoma) of Uterus 410
Tuberculosis of the Uterus 414
Submucous Fibroid 419
Uterus, with two large Fibroids 420
Submucous Fibroid, causing great Enlargement of the Uterus and Uterine Cavity 421
Uterine Fibroid, showing altered Relation of Appendages . . . 422
Enucleation of Submucous Fibroid: Seizure of Tumour with Volsella, guided by Finger 429
Enucleation of Submucous Fibroid: Cutting off Bit of Tumour seized by Volsella 429
Granular Vaginitis 449
Granular Inflammation of Cervix 450
Exfoliation of Vaginal Mucous Membrane 452
Profile of Split Cervix, not inflamed 455
Profile of Cervix, split and inflamed 455
Playfair's Probe 459
Emmet's Operation: the Sides of the Rents pared 461
Emmet's Operation: the Stitches put in 462
Microscopic Section of Mucous Polypus or Adenoma . . . 465
Insufflator 481
Follicular Vulvitis affecting Skin of Vulva 489
Follicular Vulvitis affecting Mucous Membrane 491
"Lupus" of the Vulva, or Esthiomène 496
Oozing Tumour of Labia 507
Scissors Curved on the Flat 508
Abscesses in the Ducts of Bartholin's Gland 513
Abscess of Bartholin's Gland 515
Fibrous Polypus or Molluscum Fibrosum of Labium . . . 518
Descent of Perineal Hernia in front of Broad Ligament . . . 521
Uterus Three Days after Menstrual Flow has ceased . . . 525
Uterus a Week after Menstrual Flow has ceased 525
Uterus just before Menstruation 525
Dysmenorrhœal Membrane 539
Microscopic Characters of Chorionic Villi on Section . . . 540
Duncan's Bougies 555
Diagram showing the Minimum Height of the Fundus Uteri at the Different Months of Pregnancy 580
Hæmatometra and Hæmatocolpos 604
Diagram showing Development of External Genitals and Perineum . 605

PAGE

Diagram illustrating Uterus Bicornis with Imperfect Development of One Half 619
Diagram illustrating Uterus Didelphys 619
Diagram illustrating Uterus Bicornis Duplex 619
Diagram illustrating Uterus Bicornis Semiduplex 619
Diagram illustrating Uterus Bilocularis or Septus 619
Diagram illustrating Uterus Subseptus 619
Prolapse of the Urethral Mucous Membrane 670
Urethral Speculum 685
Ureteral Catheter 686
Flexible Ureteral Catheter 686
Retro-uterine Hydatid 693
Diagram illustrating the Different Kinds of Fistula 698
Slough of Cervix Uteri, Upper Part of Vagina, and Base of Bladder . 699
Female Urinal 703
Female Urinal (French Model) 703
Needle for closing small Vesico-vaginal Fistula 704
Mode of Stitching in Closure of a small Vesico-vaginal Fistula . . 705
Milton's Knife for Vesico-vaginal Fistula 706
Milton's Toothed Forceps for Vesico-vaginal Fistula 706
Needle 707
Stanmore Bishop's Operation for Vesico-vaginal Fistula: Mucous Membrane of Bladder separated; Temporary Sutures put in; Forceps in Urethra to seize them 709
Enlarged Diagram of Sutures in the preceding figure 710
Stanmore Bishop's Operation for Vesico-vaginal Fistula. Temporary Sutures drawn in through Urethra 710
Enlarged Diagram of Stitches in the preceding figure 711
Stanmore Bishop's Operation for Vesico-vaginal Fistula: Stitching complete and Temporary Sutures withdrawn 712
Enlarged Diagram of Sewn Part in the preceding figure 713
Complete Rupture of Perineum 725
Repair of Ruptured Perineum 728
Diagram representing the Cyst Regions of the Ovary 732
Enlargement of Graafian Follicles 733
Multiple Enlargement of Graafian Follicles in both Ovaries: Rokitansky's Tumour 736
Diagram of the Structures in and adjacent to the Broad Ligament . . 737
Left Broad Ligament 738
Simple Broad Ligament Cyst, in the Opinion of Doran; but by some called Parovarium 739
Large Papillomatous Cyst springing from the Hilum of the Ovary, the greater part of which Organ is not involved in the Morbid Growth 740
Small Multilocular Ovarian Cyst 741
Portion of Glandular, Adenomatous, Multilocular Tumour of Ovary, showing Varieties of Loculi 742
Section of the Wall of a Loculus from a Glandular Multilocular Tumour, showing Adenomatous Growth 745
Incipient Papillomatous Cyst of the Hilum 746
Bilateral Ovarian Papillomatous Growths 747
Dermoid Cyst of Ovary 752
Ovarian Dermoid containing Epithelial Balls 753
Myoma of Ovary 757

PAGE

Dermoid Cyst twisted off its Pedicle and receiving its Vascular Supply from the Adherent Omentum 767
Diagram showing Distribution of Dulness and Resonance in Ascites . 779
Diagram showing Distribution of Dulness and Resonance with an Ovarian Tumour 779
Differential Characters of Ovarian and Ascitic Dropsies in Upright Posture 780
Thin-walled Fibro-cystic Tumour of Uterus 790
Sarcoma of Uterus 791
Large Hæmatometra, probably caused by the Breaking-down of a Fibroid 792
Large Pressure Forceps 801
Small Pressure Forceps 801
Wells's Large Ovariotomy Trocar 802
Wells's Small Ovariotomy Trocar 802
Sponge Holder 803
Introduction of Trocar 807
Extraction of Cyst 808
Breaking-down Solid Masses 808
Transfixion of Pedicle 811
Loop Cut and Threads Crossed so as to Interlock 811
Diagram illustrating the Danger of Ligature of the Pedicle after Transfixion without Interlocking the Threads 812
One End of the Thread passed through the Loop 812
Double Transfixion, showing Interlocking of the Threads . . . 812
Double Transfixion: Threads tied 812
Stump of an Ovarian Pedicle 813
Closure of Wound: Needle being passed through Peritoneum . . 816
Showing how to hold Ligatures out of the Way for Withdrawal of Sponges 816
Strapping to draw together Parts after Abdominal Section . . . 819
Diagram showing how Ligatures may find their Way into the Broad Ligament 821
Diagram showing Folds of Peritoneum adherent above Ligature . . 821
Ligature in Broad Ligament 821
Uterine Fibroid beginning to bulge on Peritoneal Surface: Mucous Polypi in Cervical Canal 833
Mass of Uterine Fibroids 834
Fibroid incarcerated in Pelvic Cavity 835
Subperitoneal Fibroid attached by thin Pedicle 836
Uterine Fibroid that has undergone Calcareous Degeneration . . 837
Fibroid with Suppurated Cavity in its Interior 839
Diagram showing Mode of Stitching Cervical Stump . . . 852
Doyen's Sliding Hook Clamp; Doyen's Retractor 854
Hysterectomy by Doyen's Method: Separation of Bladder begun . . 855
Hysterectomy by Doyen's Method: Cervix separated from Bladder . 856
Diagram showing Posterior Obliquity of Uterus 864
Pregnancy with Ovarian Tumour 867
Lithopædion 870
Sagittal Section of Pelvis in a Case of Four Months' Pregnancy in the Broad Ligament underneath the Peritoneum 872
Sagittal Section of Case of Pregnancy at Term underneath Peritoneum . 873
Hernia of Fallopian Tube 879

DISEASES OF WOMEN:

A Clinical Guide to their Diagnosis and Treatment.

Part I.

GENERAL.

CHAPTER I.

INTRODUCTORY.

Major and minor gynæcology.—Gynæcology, or the knowledge of the diseases peculiar to women, may broadly be divided into two parts: major and minor. Major gynæcology means the treatment of grave diseases which so endanger health or life that they *must* be treated. Minor gynæcology means the treatment of slight ailments which interfere with the patient's comfort, but, if she has fortitude to disregard this, neither impair health nor endanger life.

It is not possible to draw a sharp line between these two groups; for there are cases in which it is hard to say to which group the case belongs. But most could be easily put into one or the other category. In each group there are cases in which diagnosis is clear and treatment easy. In each there are cases in which diagnosis and treatment are difficult.

Their differences.—The kind of difficulty in the two groups is different. In *major* gynæcology the difficulties are surgical; experienced hands are wanted; hands that can report correctly to the brain what they feel. In *minor* gynæcology they are medical. The difficulty is to disentangle the parts played by the central nervous system and the local changes in the pelvic organs; to distinguish whether a small local change is deteriorating the patient's

health; or whether the patient's nervous system is weakened by quite other causes, and the weak nervous system is the means of directing attention to an insignificant local change. In the first case, treatment of the local cause cures the patient. In the second case, such treatment is of little use and often injurious.

Peculiarities of female diseases.—Why is it so difficult to distinguish, in what seems to be disease of the female genital organs, between effects of local disease and effects of nervous weakness? Why is there not the same difficulty in the case of the lung or the rectum?

Women more sensitive.—The nervous system in women is more sensitive than in men. How far this is due to inheritance, and how far to training; to a life spent indoors, with less exercise, less contact and conflict with nature and the outer world, than in that of the other sex, I cannot here discuss. The minor maladies of women can only be judged of through the medium of this abnormally sensitive nervous system; and therefore, as presented to us, they are unconsciously magnified.

Women's lives are more often solitary than those of men, hence they have more time to think about painful sensations and fewer distractions to divert their thoughts. In diseases not peculiar to women we can make allowance for the greater distress which a patient suffers because she is sensitive, for we can see what the same condition does in people who are not sensitive. Many biologists think that acquired peculiarities are never inherited; and if so, there is reason to hope that by wise training a woman might be made stronger and less sensitive than she otherwise would be.

Importance of reproductive function to women.—The greatest happiness and highest aspirations of most women are in marriage and maternity. For the average woman a disease which unfits her to be a wife or a mother is the greatest misfortune that can happen to her, next to one which threatens her life. Hence diseases which in themselves only cause trifling suffering have an importance out of proportion to their effects on health if they tend to unfit the patient for marriage and maternity.

Strain involved in reproduction. — The change in a woman's duties, surroundings, and mode of life which marriage involves is sometimes a strain upon her nervous system, which may so weaken it as to make her ill. Pregnancy, labour, lactation, and the care of young children are a further great strain upon the vital energies. The effect of this is seen in the frequency of puerperal insanity. This form of insanity is peculiar in depending less upon inherited tendency and more upon mental strain than any other form. This proposition is supported by the disproportionate frequency of puerperal insanity as compared with other forms of insanity occurring in women during the child-bearing age, and by the fact that the puerperal is the form of insanity which oftener than any other ends in recovery. When the cause is removed—the patient taken away from the stress of duty as a mother—her overstrained and broken mind recovers itself. Sterile marriage, if it lead, as it often does, to a disappointed, monotonous, solitary, unoccupied life, tends to mental ill-health. "If living creatures, and especially human beings, the most nervous among them all, are too much cut off from communication with the outer world, there is failure in nervous power."* Now, "when insanity is coming on, it is always some special organ that is complained of—it may be the bowel, the stomach, the womb, or the bladder."† If a failing nervous system may cause the patient to have pain and think there is disease in a perfectly healthy part; *à fortiori*, if there be a morbid condition which would in any person cause some local discomfort, this will, in a person whose nervous system is depressed, make life miserable.

Fears arising from special liability to disease.—There are certain grave diseases—viz. new growths—to which the female genital organs are especially liable. Most women know this. This knowledge often makes them torture themselves by fears lest slight local symptoms may mark the beginning of one of these terrible diseases. Every gynæcological specialist sees patients who are cured when they are told that they have no cancer or tumour.

* Sutton, "Medical Pathology," p. 447.

† *Ibid.*, p. 487.

From these four causes—because they affect very sensitive patients with nervous symptoms; because they are bound up with the emotional life of the patient; because they are often associated with nervous exhaustion from the strain of reproduction, and because a slight disease is often made into a great trouble by the patient's fear of the disease she thinks is coming—it results that the minor diseases of women are usually associated with many symptoms which in no way depend upon the local disease, their relation being only that of dependence upon a common cause.

Supposed reflex symptoms.—For long it was the practice to treat diseases of women without, or with only imperfect, local examination. The introduction of methods of local investigation led to the discovery of local disorders which were not before known. Thus the speculum led to the discovery of erosion on the cervix; the sound informed us of changes in the position of the womb other than visible descent. When these changes were discovered, the next step was to trace out the symptoms connected with them. It was found that in a number of cases nervous symptoms were associated with the local disease, and it was therefore supposed that these nervous symptoms were reflex effects of the local disease. It was found, further, that treatment of the local disease, either in a hospital or in a place not the patient's home, cured both local and reflex symptoms. Hence the theory seemed to be confirmed. This was the history of erosions of the cervix, the apparently wide-reaching effects of which will be found detailed in the works of Henry Bennett and Tilt; of flexions of the uterus, the supposed reflex effects of which may be studied in the writings of Graily Hewitt; and of other more recent "cures." The manifold nature of these reflex symptoms has struck many persons; hence the phrase "the Protean symptoms." It has also struck many people how closely the "Protean symptoms" due to one small local lesion resembled those due to another.

Value of Matthews Duncan's teaching.—The great service which Matthews Duncan rendered to the gynæcology of his time was in clearly seeing, and helping others to see, that often the symptoms with local pelvic changes were not in the least dependent on them; that the patient's nervous condition

either created or directed attention to the local disease; and that if the mind of the patient was relieved from fear and she was brought to live a healthy life, the local disease might often be safely neglected; that the "Protean symptoms" had nothing to do with the state of things in the pelvis.

Advantage of taking patient from home.—I have referred to an important peculiarity about women's diseases. A woman's work is in her home. If you prescribe rest for a man and he goes home to bed, your prescription is carried out. But not so with most women. For them rest of mind and body is only possible if you take them from their homes. Hence it has happened that the treatment of these small local ailments has been often attended with surprising benefit, because poor people have been treated in hospital, where the patient got the rest she could not get at home; and richer people have been treated either in lodgings or in friends' houses, where the patient has stayed for a time that she might be near her doctor. The local treatment did good, but the main benefit often came from the rest from the worry and work of home, together with wise general treatment employed at the same time.

Disease of the pelvic organs alleged to be manifested solely by remote symptoms.—It has been stated in the writings of some gynæcologists that disease of the pelvic organs is sometimes manifested by symptoms referred to some quite other part of the body. In one sense this is true—viz. that patients often from modesty mention first, and perhaps only, the symptoms which do not concern the sexual functions; so that, to ascertain those which do, inquiry must be made. But it is also stated or implied that there are cases in which local symptoms do not exist, and yet remote symptoms are due to disease of the pelvic organs. If such cases exist, I know them not.

The family doctor and minor gynæcology.—There is another practical difference between minor gynæcology and major. Minor gynæcology is that with which the family doctor is concerned. The minor gynæcological ailments, real or supposed, are common, and the majority of them come first to the family doctor. He can by sound advice prevent the patient from magnifying trifles; can disabuse her of

erroneous theories before they have become fixed in her mind; can dispel her fears for the future; can correct an unhealthy mode of life before it has had time to do harm. He can render these great services to his patients more easily than a specialist, because he knows more about his patients, is called in earlier, and sees them oftener. It must also, unfortunately, be added that he can manufacture disease by foolish meddling. Patients go to a specialist for minor troubles either because they have not confidence in the family doctor, or because he has failed to cure them or to set their minds at ease. If all family doctors were judicious, there would be little minor gynæcological work for specialists.

Major gynæcology must always be reserved for specialists. Operations for removal of diseased parts within the belly present two features. (1) They cannot be practised on the dead subject. The parts which have to be removed vary indefinitely in their relations. Nothing but practice—first by seeing and assisting others operate, then by operating—on the living subject can give skill. The danger of death, or of ill after-results if the patient recover, is much less when the operation is done by a skilled operator than when done by one not experienced. (2) Very few such operations are urgent. Cases are exceptional in which the risk will be increased by delaying the operation till the patient can be placed under the care of a skilful operator. For these reasons I think that persons not in the habit of operating ought not to meddle with abdominal surgery, excepting in cases of urgency; and even surgeons who are in the habit of operating, if their field of practice is such that they only seldom get abdominal surgery to do, had better let it alone. Those only should undertake abdominal surgery who have opportunities of getting a great deal of practice in it; and one who takes it up should make it his business to see and assist others operate before he begins to operate himself. I would venture a further proposition, although in making it I travel beyond the province of this book, because I think it important. One who is to become a good operator must begin young. The system at many of our hospitals—by which the operations are in the hands of the seniors, and the juniors, during the years most precious for the acquisition of manual dexterity, are kept to

seeing out-patients—is a bad one. It would be better for the seniors to see the out-patients and the juniors to do the operations; but without asking for such a radical change as this, I would urge that every member of the surgical staff of a hospital, especially the juniors, ought, when he has trained himself by assisting at the operations of others, to have abundant opportunities of operating.

Surgical essentials.—There are certain requisites for success in gynæcological surgery which I must mention because of their importance, but which I do not describe because they are not peculiar to the surgery of women's diseases.

1. **Knowledge of anatomy.**—No person can be a successful operator who does not know the anatomy of the parts with which he is dealing. The student ought to have learned anatomy before he begins to study gynæcology. The anatomy of the female pelvis and abdomen is described in anatomical textbooks much better than I could do it; therefore I shall not describe it.

2. **Anæsthesia.**—I assume throughout this work that when an operation is to be performed the patient is to be anæsthetised. In large towns this is best done by specialists who devote their whole time to the giving of anæsthetics. The person who is responsible for the anæsthetic should choose what he will give and how he will give it. Therefore I shall not describe the different anæsthetics, nor the mode of their administration. Those who wish instruction on this point will find it in Dr. F. W. Hewitt's work on the subject.*

3. **Antiseptics.**—Upon this the whole success of modern surgery is founded. I take this to be so beyond dispute that it needs not argument or reiteration. I assume throughout this book that the reader knows that every manipulation, even the smallest, and much more grave operations, should be done with the strictest precautions to ensure asepsis and antisepsis. I discuss neither the advantages and disadvantages of the different antiseptics, nor the details of their use. This is a wide subject, in which additions to our knowledge and improvements in our practice are continually being made. Excellent books have been written, in which the subject is

* "Anæsthetics and their Administration."

treated as a whole, and these I advise the reader to study, if he has not done so already.*

Speaking broadly, the common precautions consist in the utmost possible cleanliness of operator, assistant, and nurses; sterilisation of all instruments by boiling them in soda solution before use; soaking of the hands of those concerned, and the skin or mucous membrane of the field of operation, in a 1–2000 solution of corrosive sublimate; the purification of sponges by washing them in soda solution and keeping them in a 1–20 solution of carbolic acid; the dusting of wound-surfaces with iodoform. I shall not repeat, in the description of each operation, that these things are to be done. I assume that this book will be read by senior students and practitioners who have been properly taught general surgery, and who therefore would never think of omitting such precautions. For details I refer the reader to the special works I have named.

Plan of this work.—In most works on the diseases of women the subject-matter is arranged anatomically, according to the organ affected. But patients do not come labelled "Disease of uterus," "Disease of ovary," etc. They come complaining of *symptoms;* and the discovery which organ is in fault is often the greater part of the diagnostic problem. I have thought it more useful to the student and practitioner to arrange the maladies according to their leading symptom—that is, the one usually first mentioned by the patient. Such a division is not pathological or logical. It involves a little repetition; and in some instances it is difficult to say where the disease should rightly be placed, for the same disease will make one patient complain of one symptom, another of a different one. But I hope the clinical utility of this arrangement may compensate for these defects.

Subject of next five chapters.—There are certain symptoms and groups of symptoms which occur oftener in women than in men, and which have often been wrongly attributed to disease of the organs special to the female. While physiological conditions were taken for disease,

* Such as Hunter Robb's "Aseptic Surgical Technique"; Schimmelbusch, "The Aseptic Treatment of Wounds," translated by Rake; and Lockwood's "Aseptic Surgery."

something supposed to be morbid could be found in most women. I shall briefly point out the relation of these common symptoms to disease of the generative organs, and their most frequent causes, before proceeding to the more detailed consideration of these diseases themselves. The first and most important is the group of symptoms known as *neurasthenia*.

CHAPTER II.

NEURASTHENIA.

In the foregoing chapter I have referred to the frequent association of uterine disease with remote symptoms, which have been by some supposed to be reflex effects of local disease in an otherwise healthy woman. Such remote symptoms are due to weakness of the nervous system, which is denoted by the term "neurasthenia." In this chapter I consider more in detail this state of the nervous system, so commonly associated with disease of the generative organs.

The diagnostic problem.—To interpret rightly the symptoms associated with the minor diseases of the female reproductive organs, it is necessary to distinguish symptoms of nervous origin from those of local origin. Therefore a knowledge of the common conditions of the nervous system which may cause symptoms referred to the pelvis is necessary for sound practice in gynæcology. There are two conditions with which the gynæcologist has often to deal—neurasthenia and hysteria. These conditions, although common in women, are not peculiar to women. A complete description of their causes and symptoms, and definition of their nature, would be out of place in a work of this kind. I shall only describe these diseases as they present themselves to the gynæcologist.

The "Protean" reflex symptoms.—I have mentioned that in some books,* written when the minor changes in the female genitals were new to the profession, accounts will be found of "reflex" symptoms caused by such changes —symptoms so many and so varied that they were appropriately described as "Protean." They were said to be effects of trivial local changes, such as erosions of the cervix, anteflexion, cicatricial tissue in the perineum, tears of the cervix. According to the books referred to, however different the local condition, the "Protean symptoms" are much the same. The reader of such works will find also

* *E.g.* the writings of Henry Bennett, Tilt, Graily Hewitt, among others.

that the "Protean symptoms" seem to be a frequent complication only of trivial conditions. In the graver diseases of the female sexual organs, such as cancer, fibroids, ovarian tumours, they are not conspicuous.

The explanation.—The "Protean symptoms" so often accompany trivial local changes because women whose nervous systems are weak notice trifling symptoms, and go to doctors more readily than women who are strong. Diseases of the female genitals produce definite local symptoms, and in healthy women cause no reflex symptoms. The "Protean symptoms" come not from the uterus or ovaries or perineum, but from a weak nervous system. An erosion on the cervix hurts not the nervous system, but a weak nervous system draws attention to an erosion on the cervix. Nervous women resist pain less; they brood more over their ailments, feel more for the future, and are less able to judge calmly. Hence they feel more acutely; they increase their local troubles by fixing attention on them; they imagine that they are going to have other disease; and they are easily persuaded by unwise advisors to submit to protracted treatment, however disagreeable and unsuccessful it may be.

Why wrong views have prevailed.—The theories that the "Protean symptoms" are caused by these trivial local changes have gained acceptance because treatment of these local changes has seemed to do good. It has done good in three ways. (1) Continual local pain or discomfort makes a weak nervous system still weaker; and if a cause of local discomfort can be removed, the patient will improve, although the local trouble is only a part of the disease. (2) Anxiety about supposed disease makes a nervous patient worse; and if anxiety is stilled by an assurance that the disease is cured or being cured, the patient is made happier and better. (3) By suggestion, as, for instance, the procuring of sleep by the hypodermic injection of water. Doctors who have taken wrong views of uterine pathology have often been judicious in their treatment of their patient's other troubles, and have given the credit due to such treatment to their uterine maltreatment. Thus a physician has been known to take into hospital overworked shopgirls and governesses who were anæmic, costive, and

dyspeptic, to benefit them exceedingly by rest, liberal and suitable food, purgatives and tonics, followed by a stay at the seaside; and to attribute all the good to the wearing of a pessary, meant to straighten anteflexion, which is the natural unchangeable shape of the uterus in most virgins.

Nervous exhaustion: its relation to uterine disease.—The exercise of the reproductive function is one of the most frequent causes both of nervous exhaustion and of disease of the reproductive organs. This is why disease of the female generative organs and neurasthenia so often go together. When childbearing has produced both local disease and nervous exhaustion, the local disease aggravates the nervous exhaustion. Cure of the former disease will help recovery from the latter; but this is all the connection between them. If the nervous system be made healthy, many local changes will no longer be noticed. To assert that when disease of the female pelvic organs is combined with neurasthenia the pelvic disease is the foundation of all the symptoms, and its cure the one thing needful, is a grave error. This frequent association of nervous exhaustion and the diseases peculiar to women makes it necessary to consider this condition.

What is neurasthenia?—It is characterised by two main features—(1) increased reflex irritability, (2) diminished power of resistance to pain and depressing influences. Although there must be a change in the nervous centres, yet this change is too fine to be detected by our present methods of examination. It was called by the older pathologists "irritable weakness." Neurasthenia is not the same thing as hypochondriasis, or as hysteria, although it may occur with either.

Difference of neurasthenia from hypochondriasis and from hysteria.—Hypochondriasis is the belief in the patient's mind, without cause, that he or she is the subject of some serious bodily disease. A patient may have this delusion without neurasthenia. Women with neurasthenia have quite enough to complain of; and when they imagine disease that does not exist, you will generally find that the belief is not spontaneous, but has been put into their minds by sympathetic but injudicious friends or mistaken doctors. Hysteria, in the sense of nervous mimicries of disease, is

not neurasthenia, although it may occur with it. Not every patient with neuromimesis is neurasthenic; but most, if not all, neurasthenic women are liable to hysterical attacks.

Causes of neurasthenia.—Neurasthenia occurs in both sexes and at all ages. In young girls and in old women it is rare. In an old woman symptoms which seem to indicate neurasthenia are more probably due to some degenerative change in the nervous centres. Liability to neurasthenia is often inherited, but not the disease itself. In neurasthenic subjects born of nervous parents, it is difficult to say how far the nervous weakness is due to inheritance and how far to injudicious training, for parents who are weak are generally also injudicious. Much can be done by education to improve inherited weakness, while unfavourable influences during growth may irreparably injure the healthiest nervous system.

In women neurasthenia is commonly met with during the period of sexual activity; and its chief cause is the strain involved in *reproduction*:—the strain of pregnancy, labour, and lactation; the anxiety inseparable from the care of children; the disturbed sleep; the impairment of nutrition often associated with pregnancy and lactation; helped sometimes by local diseases, which cause discomfort and often anxiety out of proportion to their importance. Most cases of neurasthenia associated with uterine disease are due to exhaustion of nervous energy by childbearing and its consequences. Neurasthenia is often produced in women of the better class by the practice of preventing pregnancy by withdrawal: after which the woman lies awake excited, restless, and disappointed, instead of sleeping, as she should, after complete intercourse.

Exertion produces fatigue; if carried beyond this point, exhaustion. In health, fatigue is quickly repaired by rest and food. Work without rest or variety exhausts. In female youth, *over-pressure* in schools or in preparation for examination commonly fulfils this condition. It may be that a precocious girl is encouraged by parents, who mistake information and accomplishments for education, to force her brain and neglect her body, not knowing that the first aim (chronologically) of education should be to produce a good animal. From such a training results a woman with very

sensitive nerves, an active imagination, and a feeble body, who is rendered unfit for her duties by slight causes, and is then apt to torture herself by imagining all sorts of future disease to come. Physical pain produces neurasthenia, not by its severity, but by its persistence, especially when it prevents sleep. *Unhappiness* (which is mental pain) produces it. The slighter forms of uterine disease apart from pregnancy occur with neurasthenia in women who are unhappy from want of occupation and exercise; and such slight ailments may aggravate neurasthenia by making the patient anxious about a disease which she cannot see, but thinks may become formidable. If the disease be of such a nature as to affect her conjugal relations, this may produce unhappiness, or the fear of future unhappiness, which will damage the nervous health more than the direct effects of the disease. Sudden *shock*, such as fright or severe physical injury, is an infrequent but occasional cause of neurasthenia. Indigestion, by lowering nutrition and producing chronic pain, aggravates and may produce neurasthenia, but is often due to it, so that it is hard to say which is cause and which effect.

Neurasthenia is often a result of *operations*. Some surgeons forget what a great shock and strain to the nervous system an operation is. The announcement that it is needed frightens the patient; she looks forward to it with dread; after it is over she spends days of anxiety as to whether she will get well, often combined with pain, thirst, deficient nutrition from necessarily limited diet, and wakefulness. These things combine to produce nervous exhaustion afterwards, which is more marked the weaker and more sensitive the patient was before. The late Mr. Knowsley Thornton told me that he always warned his patients that they would not be themselves for a year after the operation. There is little doubt that insanity is commoner after operations than after childbirth. I have known the simple operation of dilatation of the cervical canal with division of the vaginal portion (for dysmenorrhœa) followed by insanity, and in another case by what looked like a typhoid state—prostration, sunken orbits, dry brown tongue, muttering delirium — and that without fever or local disease of any kind. The nervous weakening which follows small operations is, I think, greater

when anæsthesia is used, because the anæsthesia magnifies to the patient's mind the danger and importance of the operation.

In some cases the neurasthenia is not nervous exhaustion, but nervous *weakness*. Inherited weakness has not been strengthened by wise training. A girl born with a weak nervous system may be spoilt by over-indulgence and idleness, whence come want of interest in life, unhappiness, irritability, and the temperament that makes much of slight ailments.

Symptoms of neurasthenia.—The patient is low-spirited, easily depressed by slight causes, and the depression lasts long; hence she will often cry without apparent reason. But her depression is unlike melancholia in that it is not persistent and causeless, but variable, and produced by some cause, though a slight one. The patient is irritable; the slamming of a door makes her start. She is indifferent to things that give healthy people pleasure and that she formerly enjoyed, such as music, society, reading, eating. She lacks energy, is apathetic and easily fatigued. She cannot concentrate her attention or follow up a train of thought, and the inability to fix attention produces impairment of memory; hence the patient becomes unable to do any mental work. She cannot divert her thoughts. Her want of energy obliges her to spend what energy she has upon herself; she has none to spare for other people; hence she becomes egotistic, wanting in sympathy for others, and fond of talking about herself and her sufferings. She is troubled with feelings of terror, with groundless apprehensions of death or of insanity. Such patients often dread conversation, or a social meal, or a theatre, or church, or chapel, or a crowd, or the dark, or crossing an open space. They often feel morbid impulses, such as, for instance, to commit suicide; but these impulses seldom lead to acts. They often are exceedingly afraid of some unknown disease that they think is coming; but the fears of the neurasthenic, unlike those of the hypochondriac, can be dispelled by explanation. (It is possible that hypochondriasis may develop out of neurasthenia.) There are no hallucinations or delusions.

Sleeplessness is almost always present, and is a most important symptom, for it greatly aggravates the nervous

weakness; and to procure good sleep is the first essential of treatment. The patient is long in going to sleep; she is restless, wakes often. When she is asleep she is tormented by frightful dreams, from which she often wakes with a start and in terror; in the morning she is unrefreshed. In some few cases the patients say they sleep well; and in these cure is very difficult, for the cause lies deeper than in external influences.

Morbid Sensations.—Patients with neurasthenia often have disagreeable sensations which may be called pain. The commonest is a peculiar feeling on the top of the head. It may be described as a feeling of pressure, of weight, of dulness, of stretching, of emptiness, of lifting, of something crawling or trickling. (If you want to know what it is, you can produce it by going without sleep for a few nights.) Often the patient complains of giddiness and faintness. The power of accommodation of the eye is weakened and the retina is more sensitive, and hence there is asthenopia. The patient says things swim before her eyes; she cannot read or sew in the evening; she cannot bear a strong light. If she happen to be hypermetropic or astigmatic, these symptoms are more marked. She cannot bear a noise, for the auditory nerves are too sensitive. Morbid sensations in the limbs are frequent; there is muscular weakness, so that the patient is quickly fatigued; exhaustion and sweating soon follow exertion; but there is no paralysis. The patient often feels numbness or tingling in the limbs—the sensation commonly known as "pins and needles," or the limbs "asleep." Such sensations indicate hyperæsthesia of sensitive nerves. They are produced by pressure in the healthy; by slighter pressure in the neurasthenic. Amongst other symptoms are tremor of the limbs, most noticeable in the hands; cramps, especially felt in the calves; the symptom commonly known as "fidgets"—that is, the patient cannot keep her limbs still, but feels an irresistible inclination to move them, a trouble the cure for which consists in rubbing them. All these things indicate weak resisting power and increased irritability of the peripheral nerves.

Neuralgia and other pains are common. I have mentioned the sensations in the head; with it there is often

tenderness of the scalp. Backache is the rule, and the back may be tender. The usual pain is lumbar. Left sub-mammary pain is common, and so is left abdominal pain. Of these pains I shall speak more in subsequent chapters.

Vasomotor Symptoms.—Symptoms due to vasomotor disturbance are common—"flushings," "heats," pallor, with rapidity of pulse and sweating; feelings of oppression, of suffocation, with præcordial pain. I have known the latter symptom diagnosed as angina pectoris, and a prognosis of imminent sudden death given accordingly. The pulsation of the abdominal aorta is often felt so much as to cause suffering, and abdominal section has even been done on this account,* in the belief that aneurysm was present. The extremities are generally cold, which helps to prevent sleep. Palpitation is generally complained of, and the pulse may be quick and irregular, but there is no dyspnœa.

Digestive System.—There is often fulness and discomfort after meals, even though the amount taken be moderate. Appetite is generally bad. The patients are usually costive. Flatulence is often annoying; sometimes the distension wakes the patient up at night. Nausea and vomiting are easily produced. Occasionally there is distension, but in some patients the belly is flat, or retracted. The dyspepsia leads to bad nutrition, and it aggravates neurasthenia in this way, as well as by the suffering it causes. Dyspeptic symptoms are often those which the patient puts most prominently forward. The dyspepsia may be the primary condition, but often it has come on with the neurasthenia, and improves as this gets better. It may, therefore, be correctly spoken of as "nervous dyspepsia." The diagnosis between this kind of dyspepsia and gastric ulcer and cancer is often difficult, but is beyond the scope of this work. Disagreeable sensations about the anus are often complained of, such as itching, pain on defæcation, cramp-like pain in the rectum. Sometimes these are due to local changes, such as piles or fissure, but sometimes they are independent of any physical sign.

Mobility of Viscera.—In the class of women prone to suffer from neurasthenia—that is, those exhausted by the

* Müller: "Handbuch der Neurasthenie," S. 128.

strain of child-bearing—the belly wall is often loose from past distension and the patient has got thin. These two conditions favour mobility of the abdominal viscera. Hence movable kidney is frequent in neurasthenic women; less often abnormal mobility of liver and descent of stomach. These displacements of viscera, when present, increase the nervous depression by the symptoms which they cause. A movable kidney, if the patient gets fat again, may again become fixed.

There is often frequent micturition. This is generally due, not to disease of the bladder or kidneys, but to dragging on the bladder owing to the yielding of the pelvic floor. But forget not the possibility of diabetes. Old authors used to think that nervous disturbance was caused by states of the system which led to the deposits of crystals of phosphates or oxalates in the urine. No nervous disturbance associated with the appearance of these crystals has been closely defined, but some whose opinions are entitled to respect think that these views were not without foundation. I have seen cases in which aggravation of the symptoms was associated with a deposit of phosphates in the urine.

Patients with neurasthenia are often, but not always, anæmic. There is no constant change in the blood. They are usually, but not always, wasted. They generally perspire freely. Neurasthenia does not cause fever.

Hysterical attacks. — Women with neurasthenia become subject to hysterical seizures. These seizures come on when the patient is especially weakened either by emotion or by long fatigue or strain. They begin with some anomalous sensation resembling the aura of an epileptic fit. Then an abdominal sensation rises upwards, and feels like a ball in the throat—the long-known "globus hystericus." With this comes sudden muscular weakness, so that the patient often falls. She loses power of inhibition; there are convulsive movements of the limbs, followed by uncontrollable crying or laughing. The patient does not lose consciousness, or completely lose control of her actions. She does not always fall, and if she falls, it is seldom in such a way as to injure herself. There is no tongue-biting, and neither urine nor fæces are passed during the fit. The phenomena of the fit are not voluntary, for in

the fit there is acceleration of the pulse, and after it the patient passes much pale urine of a low specific gravity.

Strong women do not have these seizures. But the strongest and healthiest woman or man may have one under the influence of causes which depress nervous energy. Disease of the reproductive organs causes these fits only indirectly by helping to exhaust nervous energy.

Sexual functions in neurasthenia.—Neurasthenia has been said to be produced by masturbation. I believe that cases in which neurasthenia in women is due to this habit are so few that you need not think it a duty to inquire into it. Sometimes patients will complain that they have lost sexual feeling, and it is easy to understand this effect. To most women this effect of neurasthenia is not important enough to mention.

Differences among patients.—The readiness with which a patient seeks advice for the symptoms of neurasthenia, and the fulness with which she describes them, depend upon her training. Some patients will suffer much without speaking about it. Others think a remedy imperative for the smallest discomfort. Hence two extreme types of patients—one pale, thin, weak, downcast, taciturn, with cold hands and worn look, who says little of herself, and is not inclined to think her case interesting; the other blooming, plump, strong in muscular power, restless, irritable, complaining of some new trouble every day, and never tired of talking about her sufferings. These are extremes, and between them every gradation is found.

Diagnosis.—In neurasthenia with disease of the female pelvic organs, the difficulties of diagnosis are of two kinds. (1) To distinguish between neurasthenia and disease of the brain or spinal cord; either gross disease, such as sclerosis, paralysis, or tumours; or commencing insanity. It is the business of neurologists to instruct the profession on this point. I will only remind you that in neurasthenia there is neither paralysis, nor local muscular wasting, nor optic neuritis or atrophy; and the tendon reflexes are not diminished; if altered at all, they are increased. (2) The other difficulty is to judge rightly how far the neurasthenia is produced or kept up by pelvic disease. As both are common in women, they

both often occur together. When a patient has disease of the pelvic organs and has also been exposed to influences which disturb sleep, impair nutrition, and cause anxiety, it is often difficult to say which is the principal factor in producing the morbid state. Disease that produces chronic pelvic pain, or chronic anxiety or unhappiness, which is mental pain, will aggravate and keep up neurasthenia. Disease of the generative organs exhausts the nervous energy in proportion to the amount of suffering it causes, and the only way in which such disease is peculiar is that it is more likely to make the patient anxious about the future than most kinds of disease. There is no such thing as neurasthenia produced by some disease of the generative organs of which the patient was unaware. The best proof that I know of that chronic pelvic disease aggravates and keeps up neurasthenia, is the marvellous change that takes place in patients with chronic metritis at the climacteric.

Prognosis.—Neurasthenia does not endanger life. Neurasthenia is gradual in onset and remitting in its course. The patient is sometimes better and sometimes worse. She is better if she is sleeping well and leading an easy life; worse under the reverse conditions. The only danger is lest it should pass into insanity. This ought to be prevented by proper treatment. The longer the nervous exhaustion has lasted, the less distinct the cause that can be found for it, the worse is the prospect of the cure.

Treatment of neurasthenia.—There is no specific for neurasthenia. The treatment consists in removing the conditions which have exhausted nervous energy and placing the patient in circumstances favourable to its recovery.

1. **Remove pain.** (*a*) **Physical.**—In other chapters of this book, the treatment of the diseases of the female genitals which cause pain is described. Here, the general statement will be enough, that if a patient suffer from pain which is persistent, even though slight, this pain will weaken her nervous energy, and the removal of the pain will help her recovery. This statement applies to pain of any kind, whether dependent on the genital organs or not. If the patient has local pain of any kind, it should not be ignored, but its cause should be sought out and removed, if possible.

(*b*) **Mental.** — Anxiety and unhappiness are mental pain, and exhaust the nervous energy just as physical pain does. Some forms of mental pain you can remove; others you cannot, in your medical capacity, deal with, although by common sense you may sometimes lessen them. Many women torture themselves by misrepresenting their doctor's statements, or his reticence: they think they have cancer, or are going to have it; or that they are going to become insane; or that their present slight illness is going to lead to some serious future illness; or that it may wreck their conjugal happiness. Mental pain of this kind you can remove by judicious speech. If the patient has no local disease of a serious kind, tell her so as plainly as you possibly can. Find out from her or from her friends if there be any disease, or consequence of disease, to which she thinks she is predisposed, or of which she is especially afraid; and if you can truthfully do so, assure her emphatically that nothing of the kind is in the least likely to happen. Matthews Duncan used to say that he had cured many patients by telling them that they had no cancer, and some of his pupils can say the same.

There are other causes of mental pain less easily discovered and remedied; such as anxiety about children, or parents, or a husband, conjugal discord, *ennui* from want of occupation or interest in life. The discovery of these things is not made by medical skill—it is the office of a friend. If you can remove any circumstance that is destroying your patient's happiness, you will benefit her health as well as earn her gratitude.

2. **Procure sleep.**—Regular sleep is of the first importance. Most of these patients will tell you that they are not kept awake by pain, but they are restless and cannot go to sleep. If they sleep, they have bad dreams, nightmares, and wake repeatedly; and when the morning comes they are unrefreshed. While the patient has nights like these she cannot get well.

Do not give hypnotics; neither opium, chloral, chloralamide, paraldehyde, sulphonal, nor any such drug. These produce sleep, but the patients become unable to sleep without them. When long taken habitually all drugs of this

kind do harm. The only hypnotic that can be taken for years together without shortening life is alcohol. The evil of teaching patients to fly to alcohol when they feel depressed need not be told. The sleeplessness comes from increased reflex irritability. To procure sleep, lessen reflex irritability. Give a salt of bromine; not in a large dose as a hypnotic, but in continued small doses, so as to gradually produce its physiological effect, lessened reflex irritability. Give gr. xv. of sodium bromide—less depressing than the potassium salt—three times a day. The patient will not notice much effect from it for a few days, but in two or three weeks' time she will be sleeping well, if the drug be given fair play. Then leave it off, or it will depress too much. "Fair play" means the removal of causes which disturb sleep. Order the patient to bed at ten o'clock. Just before retiring, let her have as full a meal as she can take without epigastric discomfort, and with it a small dose of alcohol—not light or sparkling wine, but beer, port, sherry, or diluted spirits, according to the patient's preference and digestion. Let her feet be warmly covered when in bed. Let her not sleep in the same room with a baby or an invalid, and if her husband's occupation or habits are such as to disturb her, let her sleep alone.

Feeding.—In most cases of neurasthenia, nutrition suffers because appetite is bad, and the patient has discomfort, fulness, and perhaps pain, after food, and she therefore eats little. In some cases there is also frequent vomiting. When little is taken, and much of what is taken is vomited, the patient wastes. I have known the pain and vomiting after food suggest gastric ulcer, and the combination of these symptoms with great wasting makes the doctor reasonably suspect cancer of the stomach—the presence of either disease being disproved by the rapid success of treatment. When these symptoms are present, attention to nutrition becomes a principal part of treatment.

Relation between vomiting and uterine disease.—Neurasthenic vomiting associated with pelvic disease has often been set down as reflex vomiting, and compared to the vomiting of pregnancy. Vomiting may be provoked, or the patient may think it is provoked (which in effect

is the same thing), by disease of the pelvic organs. But there is no chronic disease of the pelvic organs which causes vomiting regularly enough to justify us in regarding vomiting as one of its symptoms, nor is vomiting frequently cured by any treatment of the pelvic organs. Vomiting with chronic disease of the female genitals is nervous, and local treatment, if it cures it, does so by making an impression upon the nervous system. Cases in which vomiting is best cured in this way are exceptional.

How to make patients eat.—When a patient with neurasthenia does not eat, it is necessary to use moral force to make her. The fact that she has got into that state implies that such moral force is lacking in her home surroundings. If so, it is necessary to take her from home. If well-to-do, she must be treated in a private nursing home, or in the house of a friend; if poor, removed to a hospital. She must be attended by a nurse selected on account of her ability to control such patients. The patient must be kept in bed, and fed regularly at short intervals. At first give her liquid food only, of the most easily digested kinds--milk, beef-tea, beaten-up eggs. If, as sometimes is the case, the patient does not like these things, give one of the malted or peptonised foods that are sold, or interchange several, to make a variety—Mellin's, Benger's, Allen & Hanburys', Savory & Moore's, etc. The kind is not of much consequence; the one the patient likes best is best for her. Give it at first in small quantities; even spoonfuls, if the patient will not take more, frequently repeated. The nurse's business is to insist on the patient taking food, and taking more and more each day. When she has got to take four or five pints daily, let solid food be added, beginning with bread and milk; then boiled fish, chicken panada, minced meat, etc., and so on, until the patient is eating the same diet as other people and as much. Let the cook suit the patient's taste as much as possible, but bid the nurse be inflexible as to the quantity.

If the patient vomits, it is a good plan to keep her without food for some days, supporting her with nutrient enemata. This will make her very hungry. If the vomiting is not dependent on organic disease of the stomach, you may then give her small quantities of food, and she will keep them

down. Tell her that if the slightest vomiting return, the stomach must be again kept empty for some days, and you will have no more of the vomiting.

Although in these cases cure is easier when the patient is away from home, yet it is not impossible at home. I have known an emaciated girl cured by one visit, for she had a sensible mother, who took the advice given, and forced her daughter to eat; and in a few months the girl was fat. In another case of vomiting and wasting, so great as to make cancer suspected, the patient was cured in hospital in the way described. She went home, and soon showed signs of relapse; but she had a sensible husband, who told her that she must go back to hospital the next day, and this proposition always cured the vomiting.

Such difficulty in feeding the patient is not common. But in most cases of neurasthenia there is dyspepsia. There is no special and peculiar form of indigestion produced by uterine disease. The dyspepsia present in a neurasthenic woman who has some pelvic trouble should be treated just as in a patient who has no pelvic disease. Detailed information upon the treatment of dyspepsia is beyond the scope of the present work. Use the well-known drugs—bismuth, the preparations of pepsin, alkaline carbonates, bitters, nux vomica—without reference to the pelvic symptoms.

Massage.—When a patient is kept in bed or lies on the sofa most of the day for a long time, the muscles become weak. This weakness soon disappears when active life is resumed, but for a time it is discouraging. It can be counteracted by massage—that is, shampooing the limbs. In neurasthenia the circulation is bad; the extremities are cold. This is improved by vigorous rubbing. If the nurse who does this is judicious in her manner and conversation, it also diverts the patient's mind, makes her dwell less on her symptoms, and gives her confidence of getting well. In these ways massage is good. But it is subordinate to the great points of rest, food, and sleep. If these are not secured, massage will not cure. If they are, the patient will get well without massage, although it will help. Of late years massage has been erected into a speciality. The ways of tapping, stroking, rubbing, kneading, and moving the limbs have been labelled

with names taken from a foreign language. Precision may be advantageous when massage is used for local deformities, paralysis, etc.; but in cases such as those now under consideration it matters little how the patient's limbs are rubbed or kneaded so that it is applied to all the limbs, and that the patient feels the better for it. It is a good thing, but not a thing so important that you should call on the patient to make a sacrifice in order to secure it.

Galvanism.—Much the same may be said of galvanism. By its use muscles can be prevented from wasting. The mystery and the imposing apparatus required satisfy the patient that something powerful is being done, and give her confidence. For these reasons it is a help in treatment, but not so important a thing that you should insist on it. Both massage and galvanism take time and trouble from the attendant who applies them; therefore they involve an expense, which may be an important consideration.

The "Weir Mitchell" treatment.—Of late years the treatment of neurasthenia according to the principles outlined in the foregoing pages has been systematised by Dr. Weir Mitchell, and his method has been introduced into Great Britain by Dr. Playfair. It consists in—(1) Seclusion, by which the patient is protected both from worry and from injudicious sympathy. (2) High feeding, and in the beginning, if necessary, forced feeding. (3) Rest in bed until nutrition is improved enough to call for exercise. (4) Prevention of the ill effects of inaction, and occupation of the patient's mind by massage and electricity. The patient is placed under her physician's care in a house in which she neither receives letters nor sees friends, but is in communication only with nurses whose sole business is to carry out this treatment. The benefits of this treatment are beyond doubt. But it is, and must be, costly. If the patient, after her health has been improved by it, goes back to the surroundings and the mode of life which produced the neurasthenia, she will relapse. If you can secure for the patient sleep, food, and healthy influences round her in her own home, it is not necessary for her to leave it. Massage and electricity can be used at home, but they are helps, not the main thing. Massage improves appetite, and

abdominal massage will sometimes relieve constipation and flatulent distension.

Cases for the Weir Mitchell treatment.—This treatment is especially suitable for anæmic and wasted patients who cannot eat. It is not suitable for patients with melancholia, or for patients suffering from painful diseases of the viscera, or as a calmative for patients who seem to be suffering from the strain of over-activity.

Outdoor exercise.—People with nervous exhaustion spend much of their time indoors. The late Dr. H. G. Sutton wrote, "If living creatures, and especially human beings, the most nervous among them all, are too much cut off from the outer world there is failure in nervous power, evidenced by weakness of circulation and shallowness of breathing."* Therefore, as soon as you can, order these patients to take outdoor exercise. First make the patient eat and sleep, and then get her out in the open air as much as possible without fatigue. Recommend walking, riding, driving, or games, such as croquet, golf, lawn tennis, skating, according to the patient's circumstances, tastes, and power. Gentle indoor gymnastic exercises have been systematised under the name of Ling's method; and this, provided it is not pushed to the point of fatigue, is good, but not so good as outdoor sports. But it may be useful, for the patient may obey in her room the commands of a gymnastic teacher when she will not take part in an outdoor game or walk. Such exercises have much the same effect on the neurasthenic condition as massage, except that the patient is active instead of passive. The place of active exercise is rather to prevent relapse when a certain degree of improvement has taken place than as a curative agent for bad cases. If you insist on outdoor exercise for a patient too weak to take it, you will only cultivate distaste for it, and increase the difficulty of dealing with the patient.

Drugs in neurasthenia.—There is no drug that is a specific for neurasthenia. Treves has wittily put it—"You cannot pour strength down the œsophagus." But you can pour down drugs that will help the patient to get strength out of food, and restore nerve energy by sleep. The use of

* "Lectures on Pathology," p. 447.

these drugs I have spoken of. There are certain drugs believed to act directly on the nervous system which need mention.

In some patients with neurasthenia *arsenic* does great good. Dr. Hughlings-Jackson has put forward the ingenious speculation that the effect of arsenic depends upon its chemical properties as the heaviest and most stable in combination of the triad group of elements; that in disease in which the discharge of nervous energy is in excess, it is because in some brain molecules, nitrogen (the element most difficult to hold in combination, the essential component of all explosives) has taken the place of phosphorus; and that we do good by replacing it by the chemically equivalent, but more stable, arsenic. Whether this be true or not there can be no doubt of the benefit derived from arsenic by over-active, energetic, irritable, restless people. In the lymphatic, indolent, feeble sort arsenic does no good.

Dr. Clifford Allbutt has remarked that in social life we find two opposite types: those who are observant, but not imaginative; and those who are imaginative, but not observant. Sometimes, though rarely, great powers of observation and imagination are united in the same person; and then we have a great genius, like Shakespeare or George Eliot.

Among neurotic patients these two forms occur: the indolent and introspective, who are always thinking about themselves, and the active and observant, who think of others. Persons of the introspective habit are often fat, and are easily tempted to alcoholic excess. They are often sending for the doctor, and what they need is rousing and occupation. Dr. Allbutt calls them "vaporous neuralgics." Persons of the observant type are vivacious and industrious; generally thin; bad sleepers, uncertain eaters. They are quick, irritable, sensitive, clever. Such persons do not want rousing, but will not tolerate soothing or restrictions. Dr. Allbutt calls them "irritable neuralgics," as opposed to the "vaporous neuralgics." The great thing in the treatment of these persons is a generous diet and lessened labour. Such persons are benefited by arsenic. I have recognised the types described by Dr. Allbutt.

There are certain drugs which are called *nervine stimulants*. Among these are castor, assafœtida, and valerian.

We know not what these drugs exactly do, but when women are nervous and excited a dose of one of them makes them feel better. Assafœtida is a slight expectorant and laxative; valerian in large doses is said to produce somnolence and stupor; but they are not used to produce these effects. They are usually given combined with a diffusible stimulant, as in the Spiritus Ammon. Fœt. and the Tr. Valerian Ammon. We know not that these medicines do harm in the ordinary doses; so that it is often well to give patients a mixture containing one of these drugs, to be taken occasionally. Quinine and nux vomica are useful in improving appetite and the tone of the nervous system; but their effect is only temporary. Nothing is gained by keeping patients on them continually. Iron should be given to a neurasthenic patient who is anæmic just as to any anæmic patient. As a rule, it is better to forbid tea or coffee, because they tend to prevent sleep. But if the patient does not like the prohibition, limit it to tea or coffee taken after five o'clock.

Change of air and scene.—This is the most powerful tonic that we have. But if the patient cannot sleep and does not eat, she will not improve anywhere. Get her to sleep and eat before you send her away, unless you are sure that where you are sending her she will be under the care of a wise doctor. If the patient is averse, as many are, to separation from her children, insist not on her going away until arrangements have been made to satisfy her anxiety about them; for constant anxiety will do more harm than change will do good. Choose a place where the patient can be almost always in the open air. The qualities of the waters with which health resorts are often provided matter little in these cases. It is the changed mode of life that is beneficial; not the fluid that is swallowed or applied to the skin. What place you recommend must largely depend upon the time of year, and the patient's circumstances and likings.

CHAPTER III.

HYSTERIA.

This is a disease to which women are more subject than men. Hence it needs consideration in a work on diseases of women.

What is hysteria ?—Sir S. Wilks defines it as "a nervous disorder in which the nervous system is deranged without the existence of any organic disease."* I shall not attempt a closer definition than that of Sir S. Wilks.

The earliest theory of hysteria was that it depended upon the uterus. This accounts for its name. To that became added the notion that it was due to unsatisfied sexual desire. It is certain that it has nothing to do with the uterus, for it occurs in men as well as in women. Nor has it anything to do with sexual desire, gratified or ungratified; in fact, in some hysterical subjects, there is anæsthesia of the vagina. The tendency to hysteria often lies latent so long as the subject is in good health, but is brought out when any cause reduces the tone of the nervous system. For this reason hysteria often is seen combined with disease of the pelvic organs.

Three conditions included under the term.—As commonly used "hysteria" includes three different things—(1) nervous mimicries of disease, (2) the hysterical paroxysms, and (3) other rarer phenomena, such as catalepsy, stupor, anæsthesia, alterations in vision. The neurologist is generally consulted about the rarer phenomena. The first two conditions are so common that in a certain proportion of patients suffering from them uterine disease is supposed to be present.

The diagnosis of hysteria.—Neurologists now make the diagnosis of hysteria by the physical signs. Some of these are easily ascertained, some can only be found out by careful and prolonged examination, and some require for their detection a trained observer and special apparatus. I shall not go into detail about them, for the diagnosis of hysteria is a problem for the neurologist; but I enumerate the physical signs, beginning with the easiest to perceive, and

* "Diseases of the Nervous System," p. 362.

going on to the more difficult. They are (*a*) loss of pharyngeal reflex, and less commonly, loss of conjunctival and corneal reflexes. (*b*) Hysterogenetic zones, or hyperalgesic spots. These are situated at various points, such as the so-called "ovarian region," that is, about two inches internally to the anterior superior iliac spine; directly below the breasts; internally to the sterno-mastoids in the neck; in the temples; and in the supra-orbital regions. Pressure over such spots causes a "sickening sensation," and not uncommonly a feeling of constriction at the throat and palpitation of the heart. (*c*) Loss of sensation over parts of a limb, or even over one-half of the body. Over such anæsthetic areas, all forms of sensation to touch, to pain, to heat, and to cold are lost co-terminously. Such loss never occurs from organic disease. Such areas are insensitive to a painful Faradic current. (*d*) Limitation of the field of vision. This is one of the most valuable signs, but for its detection a trained oculist with a perimeter is required.

It is to be remembered that hysteria is always associated with mental degeneration. The field of attention is restricted exactly as the field of vision is limited. Malingering is extremely common along with gross hysteria. Thus, a person who can be burnt with impunity down one-half of the body, may sham that her tongue can only come out to one side, or that it cannot be protruded at all. Under the term "neuromimesis" have been placed both hysteria, that is, the disease producing the physical signs I have enumerated, and fraud, such as the artificial production of ulceration on the skin, etc.

Nervous mimicries, or neuromimesis.—A young girl who has no sign of disease about her finds that she cannot use her legs; or cannot speak above a whisper; or is blind with one or both eyes; or deaf with one or both ears; or cannot pass her urine; or vomits, coughs up, or passes blood; or develops an extraordinarily high temperature without any other sign of fever; or produces a rash on her skin which is unlike any skin disease known to dermatologists; or has an excruciating pain in her spine, or in a joint, or it may be in her pelvis. I attempt not an exhaustive catalogue of the diseases which an hysterical girl may mimic. But I will again quote Sir S. Wilks: "When . . . you

remember that all mankind is destined for some work or employment, and that women are debarred from performing the tasks which Sydenham prescribes for men, whilst there may be no opportunity of their undertaking the offices which more especially belong to them, such as the rearing of children, domestic avocations, and the like, then you will comprehend that, nature having no outlet for the superfluous energies, the whole system becomes disordered, and those hysteric symptoms ensue which we may regard as the exponents of a wish unexpressed or a want unfulfilled. In this case every organ of the body may suffer, and amongst the rest the uterus. The latter may erroneously be seized on as the seat of trouble, and, being assiduously treated by the medical man, the nervous disorder may become more deeply rooted, and, the real cause being overlooked, a subjective ailment be converted into a real one. I have seen so many instances of this that I can speak very confidently as to its truth."*

Mimicry of disease, if it occur in a man who has some gross motive for simulating illness (for instance, a soldier who wants to escape some disagreeable duty, or a man who wants to get money out of a railway company), is called malingering or shamming. But in hysterical mimicry no such motive is discoverable. Sir S. Wilks says: "The desire for sympathy, or that feeling which many possess of taking a prominent place in the hearts of kind friends, will prompt many a woman to pretend to be ill when she has no ailment whatever, and, in a further stage of this morbid state, actually to manufacture a disease."†

I refer the reader to other works for full descriptions of these nervous mimicries.‡ But if this work is to be of use to those who practice gynæcology, I must speak more fully upon two points—(1) the relation of these mimicries to pelvic disease, and (2) the special mimicries which are apt to puzzle the gynæcologist.

Relation of neuromimesis to pelvic disease.—These nervous mimicries have been described as reflex effects of

* "Diseases of the Nervous System," p. 365.

† *Ibid.*, p. 366.

‡ See Sir Benjamin Brodie's "Lectures Illustrative of Certain Local Nervous Affections"; and Sir James Paget, "Clinical Lectures." Ed. by Marsh.

uterine disease. This is false. The only relation between them is that they both affect women, and therefore may occur together. They seldom do, because organic disease of the pelvic organs is rare in young virgins, who are the usual subjects of neuromimesis. If a girl who has a nervous mimicry of disease has also a disease of some pelvic organ, such as a urethral caruncle, a polypus, an adenomatous growth, or an ovarian tumour, it should be cured just as similar disease occurring in any other patient. The cure of such pelvic disease may help in the cure of the neuromimesis. But if there are no symptoms of disease in the pelvis, a local examination ought not to be made.

Nervous mimicries of pelvic disease.—There are three common kinds of mimicry which may seem to indicate disease in the pelvis—viz. (*a*) retention of urine, (*b*) pelvic pain, (*c*) theories of disease.

(*a*) **Retention of urine.**—This is the commonest. A healthy young woman, generally unmarried, finds that she cannot pass water. There is no local disease preventing her from doing so. In such cases a ready explanation is that the patient gains a morbid satisfaction from the manipulation of the external genitals unavoidable in passing a cathether. But I have never known such feeling betrayed by immodest conduct. When called to such a case it is prudent to pass the catheter once, lest there be some organic disease of bladder or urethra. But when you are sure there is none, use not the catheter again. Explain that its frequent use will cause mischief. If the patient insists that she needs a catheter, let a nurse pass it, or teach a female relative to do it. Give the patient a purgative, and tell her to retain her urine as long as she can. If she retain it so long as to cause pain, she will be unable to resist relieving the bladder when the purgative acts. With such treatment the retention will soon be no more heard of.

(*b*) **Pelvic pain.**—Surgeons have long recognised hysterical joints and hysterical spines. Just as a hysterical girl may complain of pain in her back or her knee without any morbid change to account for it, so she may complain of pain in the pelvis and apply to it some strong epithet such as "agonising."

I have seen the symptoms of peritonitis well simulated by such a patient. On examination no physical sign of disease is found. The pain, however severe it is said to be, does not interfere with any pleasure the patient may wish to enjoy; nor is there any objective sign of the depression in health which long continued pain produces. It may be proper to examine such a patient in order to be certain that there is no local disease. But beware of local treatment. You will do your patient harm by keeping her attention directed to parts that she had better not think of. You will injure your own reputation, for you will not cure her. She will have the pain as long as she pleases. The best treatment of such cases is wise neglect.

(*c*) **Theories of disease.**—A third class consists of those who have no definite pelvic symptoms, but who have had it put into their heads by some injudicious friend or doctor that they have something the matter with the womb—*e.g.* ulceration, or displacement, or congestion—upon which they brood, which they persuade themselves they have, and which they think and tell other people is the cause of their symptoms. These theories of disease, when fixed in the patient's mind, are hard to dislodge.

Difference between Hysteria and Neurasthenia.—Hysteria differs from neurasthenia in this, that the symptoms are localised in accordance with *mental* conceptions, and not according to the distribution of peripheral nerves. Thus, when we think of "the hand," we think of everything below the wrist: "the leg" suggests to us everything below the knee. When a person thinks of "my belly" or "my back," the mental picture conceived of each is as a separate entity, like the front and back halves of a cuirass. When we speak of "the cheek" we mean the external surface of the face covered with skin, and not the mucous lining of the mouth. Hysterical anæsthesia and hyperæsthesia is localised in accordance with these mental conceptions, or others like them, and not according to the areas supplied with nerves from particular parts of the spinal cord.

Treatment.—These mimetic diseases are to be cured by moral treatment, not by drugs, and still less by meddlesome gynæcology. Sir James Paget has put the case happily:—

The patient says, "I cannot"; her friends say, "She will not"; the doctor says, "She cannot will."

In the treatment of these cases the great thing is to give the patient confidence that she will get well, and a motive to try to get well. One who takes the harsher view of the case may say, an excuse for getting well. A doctor who can inspire the patient with confidence can cure her by telling her that she is cured. If you have not such command over your patient as to be able to do this, supply a motive by putting before the patient a vivid picture of what will happen if she does not get well, and then inspire confidence by some harmless treatment, which you should assure the patient will quickly cure her. It is for the latter purpose that some uterine treatment may occasionally be justifiable. If the patient has a fixed idea that her disease depends upon some change in the pelvic organs, some harmless local treatment may help her to believe that she is cured. But such a mode of cure is not the best; it is a tacit confession of weakness—a thing for a practitioner to be ashamed of. Such treatment should never be protracted. A case of neuromimesis, properly treated, should be cured in a week.

The best treatment of all nervous mimicries is neglect. The fact that you are sent for implies that this has not been, and probably will not be, tried.

Hysteria is the outcome of heredity plus the surroundings. The influences which in a predisposed patient will produce hysterics, are repeated suggestions of disease with want of control. The suggestions may be auto-suggestions, or suggestions from a medical man or from friends. If the patient remains in the surroundings in which these arose, the disease will be kept up by constant suggestion. Therefore, for treatment, it is essential that the patient should be removed from suggestions of disease, and put under control. Suggestions should be used to make her think that she is well. When the hysteric is under the influence of a manifestation of the disease, she is no longer easily suggestible from without, and the medical attendant should remember that long continued tactful counter-suggestion is necessary. An explosion of violence is generally useless, and may do harm. A household in which there is an hysteric is usually dominated by the hysteric. The

way in which such a household can free themselves from the sway of the hysteric is not by trying to repress her, but by ignoring her; by pursuing a policy of wholesome neglect.

Abuse of patient's confidence.—An able writer has said: "I have laboured for hours and days . . . to create a feeling of dependence. . . . I aim to gain absolute and entire control over the patient, to understand every thought and motive, and to direct her as a child." I quote this because it expresses what you ought *not* to do. Without the confidence of the patient you can do nothing for her; but you abuse that confidence if you try to establish a personal influence over a foolish woman. You should avail yourself of her confidence in you by inducing her to live a healthy and, if possible, a useful life, independent of doctors.

Nomenclature.—These nervous mimicries are almost universally known as "hysterical." Dr. Buzzard* says that malingering is often improperly called "hysteria." I agree with him, but I think the impropriety is so usual that it is hopeless to try to eradicate it. I quote Dr. Buzzard to emphasise the great difference between these nervous mimicries and the hysterical paroxysm and other symptoms of hysteria properly so called.

(2) **Hysterical fits.**—The hysterical attack or fit is popularly called "hysterics." For long medical men thought it the chief symptom of hysteria. But Dr. Fagge remarks that in most cases of hysteria (he includes under this term nervous mimicries) no attacks occur at any part of their course; and he quotes Briquet, who says that in three out of four cases of hysteria there are no fits.

The hysterical fit differs from the nervous mimicries of disease in being involuntary. It is a symptom of nervous weakness or nervous exhaustion. Women have weaker nervous systems than men, and therefore they are more liable to hysterical fits. The strongest and sanest woman may, in favourable circumstances, come to suffer from hysterical attacks; and Sir S. Wilks states that a well-known member of Parliament, a man of sturdy frame, became hysterical beside the grave of his friend Cobden. I have described the fit in a previous chapter. The liability to

* Quain's Dictionary, article "Hysteria."

fits of this kind is a different thing from the simulation of disease, and it is unfortunate that the same word should be applied to both. Women with disease peculiar to their sex are especially liable to these fits, because so many of them suffer from neurasthenia.

In the treatment of patients subject to hysterical seizures the indication is to improve the nervous tone. Treatment of disease of the sexual apparatus is indirectly beneficial only so far as it does this.

CHAPTER IV.

HEADACHES.

So-called uterine headache.—I think it necessary to put in this book some information about headaches in women, because much has been written about "uterine headaches." I know no such thing as a "uterine headache," meaning by that term a headache peculiar to uterine disease, produced by it, and needing for its cure that the uterus be treated. In the investigation of a case of headache in a female, the genital functions are not the first thing to inquire about, but rather the last.

But negation is seldom useful. As headache often goes with disease in the pelvis, because both are common in women, I think it may be useful to mention the common forms of headache in women, and the lines along which this symptom should be investigated. I shall only mention the salient features of each kind I name. For fuller information the reader must refer to the writings of general physicians.*

Migrainous headache.—The common headache, in women as well as men, is migraine. This is popularly known as "sick headache," or "bilious attack." There are all degrees, ranging from cases in which slight frontal headache is the only symptom, to those in which severe headache is accompanied with vomiting, visual phenomena, numbness and tingling in the limbs, difficulty in speech, and confusion of mind. These headaches are inherited in (according to Liveing) about half the cases. They recur periodically. In some cases the patients say they have been subject to them as long as they can recollect, which probably means that they began about the time of the second dentition; others, that the headaches began about the time

* See Liveing on "Megrim, Sick Headaches, and Allied Disorders," 1873; Harry Campbell on "Headaches," 1894; and Head, *Brain*, Autumn No., 1894.

when menstruation began; and in a few the headaches only date from early adult life. They generally get worse at about the menopause, and when that is over, cease to trouble the patient. They recur periodically even when the patient is otherwise in the best of health. She goes to bed well, and wakes up in the morning with a headache—a localised pain, usually in the front of the head. Sometimes the headache is relieved by vomiting, sometimes only by rest and sleep.

Uric acid headache.—Dr. Haig* has shown that many recurrent headaches are due to the presence of uric acid in the blood; can be cured by remedies which help the elimination of uric acid—the best being calomel, in repeated half-grain doses, and salicylate of sodium, gr. xv. for a dose; and can be prevented by eliminating from the diet meat, eggs, fish, tea, coffee, and cocoa; the patient living upon bread, milk, rice, and similar vegetable products, cheese, and fruit. I know not what proportion of recurrent headaches are thus produced. But I have met medical men who have tested Dr. Haig's statements upon themselves, and have found that they could produce or avert headaches at will, by attention to, or neglect of, his rules of diet. I am, therefore, satisfied that his statements are true of some cases.

The diagnosis of migraine is not difficult. The history, that the patient has for years been subject to similar headaches, and that no other cerebral symptoms have developed, makes it clear.

Relation between migraine and disease of the pelvic organs.—If the health of a patient who is subject to migraine gets deteriorated in any way, so as to lower her nervous tone, her headaches will come on oftener, and may be more severe. There are four common causes which are thus apt to provoke attacks of migraine—(*a*) depressing emotions, such as anxiety, fright, fear, etc.; (*b*) over-fatigue; (*c*) indigestion; (*d*) menstruation. Chronic disease of the pelvic organs may, like the familiar causes I have specified, make migraine more troublesome. But this is not an effect peculiar to the uterus; it is not a reason for calling migraine a uterine headache.

* "Uric Acid in the Causation of Disease."

The vertical headache of neurasthenia.—This headache is often associated with pelvic symptoms in women, because pelvic symptoms are often produced or made important by neurasthenia. It is distinguished by its situation; its character, which is that it is said not to be a pain, but rather a disagreeable sensation, variously described; that it is associated with insomnia, and is cured by giving the patient sound sleep. I have spoken more fully of this in the chapter on Neurasthenia.

The headache of cerebral tumour.—Remember that a headache may be the first symptom of cerebral tumour. Its nature will be indicated by the association with it of vomiting, optic neuritis, and local paralysis. In but few of the many women who have headache is it from this cause. But in those few it is of vital importance you should early recognise such a headache. Moxon said: "If I were an examiner in medicine, I should ask a candidate, 'What would you do if a young adult came to you with signs of organic disease within the cranium?' And if he did not say he would at once give iodide of potassium, I would send him down three months to think it over."

The headache of renal disease.—Headache may be a symptom of renal disease. In a pregnant woman it may be the first and chief symptom. When consulted about a headache which is severe, persistent, and of recent date, remember to examine the urine and to use the ophthalmoscope.

Anæmic headaches.—Pain in the head is common with anæmia. It may be of more than one kind. Anæmia makes sufferers from megrim have more frequent and severer attacks. Anæmia is often associated with insomnia, and then there is the vertical sensation characteristic of neurasthenia. Anæmia makes patients liable to neuralgia, because the nerves are not nourished with healthy blood. Hence the headache is sometimes of a neuralgic kind: a sharp pain, sometimes described as a feeling as if a nail were being driven into the skull. This has long been known as the *clavus hystericus*, an instance of the bad effect of authority in medicine. The expression *clavus hystericus* was used by the great Sydenham, and noun and adjective have stuck together ever since. But the symptom denoted has nothing to do with

hysteria. It is sometimes met with in those who are hysterical and anæmic because thay are anæmic, not because they are hysterical; oftener in anæmia, without hysteria.

Continuous headache.—Sir Stephen Mackenzie * has described a kind of headache, the special feature of which is its continuousness. It is a dull pain, felt usually over the whole head, sometimes over part, but not always the same part. The patient wakes with it in the morning, and it lasts till night; and if she wakes in the night the head still aches, and she has it every day, though it varies a little in severity. The head is not tender; there is no vomiting, nor any ocular symptoms; it is not affected by aperients. It is not migraine, for the patient may have attacks of migraine superadded to this persistent headache. It occurs in men as well as in women, mostly in young adults. We know nothing as to its causation. Mackenzie says "it is not due to peripheral irritation or to anæmia." I may add that it is not due to disease of the pelvic organs. I have met with it in women complaining also of symptoms due to intra-pelvic conditions, and it has not been altered by the relief of those symptoms. Mackenzie has found most such cases cured by cannabis indica, beginning with half a grain of the extract twice or three times a day, gradually increasing the dose, if necessary, up to two grains, and persevering with the drug for months before concluding that it is useless. I have found this treatment cure, but not in every case.

Syphilitic headache.—Syphilis may cause headache in three ways: (*a*) accompanying the febrile secondary stage; (*b*) in the tertiary stage by affecting the brain; or (*c*) the periosteum and bone. (*a*) The first will be identified by the fever and the rash, and the fact that the headache is of quite recent origin. (*b*) I have already spoken of the headache from cerebral tumour. (*c*) Headache from cranial periostitis is worse at night, and accompanied with nodes which will be felt when the head is examined. The treatment of these headaches is, of course, mercury and potassium iodide.

Rheumatic headache.—Pain in the head may be muscular rheumatism affecting the occipito-frontalis muscle and fascia. This pain is produced when the scalp is moved.

* *Brit. Med. Journ.*, Jan. 15th, 1887.

Toxic headaches.—These headaches are rightly included in systematic accounts of headaches, but they are not likely to be supposed uterine. They result from the entrance into the body of something which causes headache, and is therefore to this extent a poison. The poison may be a drug—the ones commonly producing this effect being quinine, iron, and opium. It may be food not properly digested. It may be alcohol, in excess; or the noxious ethers contained in bad spirits. It may be gaseous—the exhalations from badly ventilated living rooms, from crowded places of public resort, or from drains. These headaches will cause you little difficulty in diagnosis; for the patient commonly knows the cause of her headache. If she does not, inquiry will detect a possible cause, and your hypothesis will be verified or refuted by asking her to observe the effect next time she is exposed to the cause in question. These headaches are not, as a rule, continuous over days; nor does their commencement date far back.

Febrile headache.—The head aches in the initial stage of many febrile diseases, but there is nothing in the headache peculiar either to fever or to any particular kind of fever. Therefore, when a patient unaccustomed to headache complains of it, take her temperature.

Congestive headache.—Some writers have described what they call "congestive headache;" that is, headache supposed to be due to congestion of the brain. Congestion may be either active or passive: active when more blood than usual goes to a part; passive when the return of blood from a part is hindered. I know no evidence that active congestion of the brain, if there be such a thing, causes headache; nor do I know of any headache in which there is the least evidence of active congestion of the brain.

Passive congestion of the brain does cause headache. It may be produced by coughing, blowing the nose, vomiting, blowing wind instruments, stooping, violent effort of any kind which fixes the chest. It is present in heart or lung disease obstructing the circulation. Its connection with its cause is generally obvious.

Referred headaches.—Dr. Head has shown that pain in the head is often a "referred pain," dependent upon disease

elsewhere, and accompanied with cutaneous hyperæsthesia, and that there is a constant relation between the organ affected and the site of pain and tenderness. As headache is not the subject of this book, but is referred to only with the object of guiding the reader away from bad practice, I cannot fully quote Head's results,* but must refer the reader to his work for specification of the areas affected.

Headache from eye-strain.—When a hypermetropic patient becomes the subject of neurasthenia the ciliary muscle fails; its constant straining brings on headache. Headache may also result from other faults in the ocular refraction; but hypermetropia is the commonest. Headache from this cause comes on in the morning, and is made worse by occupations involving use of the ciliary muscle. Therefore, when a young woman consults you for headaches, ask if her eyes ache and whether she has difficulty in reading small print at night. If those symptoms are present, the refraction of her eyes should be examined, and spectacles, if required, worn.

Dental headache.—Headache may come from carious teeth if the pulp be attacked. Facial neuralgias are common, as well as headache, in weakly women. In any case of headache to which the patient is not accustomed, and especially if the headache be accompanied with the darting pain of facial neuralgia, forget not that the teeth may be the source of the trouble. Examine the mouth, and if you see carious spots, or if teeth are abnormally sensitive to contact, heat, or cold, send the patient to a dentist.

Nasal headache.—Disease of the nose—catarrh and adenomatous over-growths, leading to blocking of the nasal passage, interference with breathing, and retention of secretion—may cause persistent headache. These diseases have only comparatively recently been exactly studied. In a case of persistent headache inquire if the patient can at all times breathe well through both nostrils. If the nostrils, or either of them, are at times stuffed up, the nose should be thoroughly examined, and treatment for the removal of the obstruction employed.

Aural headache.—Disease of the middle ear may cause

* *Brain*, Autumn, 1894.

headache; but as this starts from the meatus, its true cause will seldom be overlooked. Disease of the meatus causes purely local pain. Head finds that the ear, the tonsils, the posterior teeth of the lower jaw, and the lateral parts of the tongue have in common an area over which they may produce head-pain.

Dyspeptic headache.—It is a common belief that indigestion may cause headache, especially when associated with constipation. The effect of blue pill in dismissing headache is an ancient piece of therapeutics. Harry Campbell doubts whether, *in non-megrimous subjects*, dyspepsia is as potent a cause of headache as is generally supposed. I pass this question by with the remark that, in the treatment of headache, to remove dyspepsia if possible and to obviate constipation should be one of the first steps in treatment. Head finds that disease of almost any abdominal viscus may cause referred pain in the head, with superficial tenderness; the only viscera that do not produce headache being the uterus, Fallopian tubes, and bladder.

Other supposed "reflex" effects of uterine disease.—From the frequent association of pelvic disease with states of the nervous system which make patients liable to headache, there is some appearance of reason in talking about uterine headache. But there have been publications—I trust now out of date—in which uterine paralysis, uterine cough, ovarian dyspnœa, etc., have been written about. The uterus and ovaries have been maltreated to cure these maladies. Such things cannot now be seriously discussed. They only mean that a patient with some organic disease has had the misfortune to meet with an incompetent doctor.

CHAPTER V.

PAIN IN THE BACK.

Pain in the back is common in women. It may be chronic —that is, the patient has had it for months or years; or it may be recent—that is, dating from a few days or weeks only. If the former, it is not due to acute disease. Chronic backache may be due to disease in the pelvis or to other causes, or to disease of the generative organs with other causes.

Habitual backache.—There is a common backache which is incurable. Some women's backs always ache. An eminent lady doctor has said that women may be divided into two classes—women with backs and women without them. This habitual backache is usually lumbar, in the "small of the back"; but it may extend up to the dorsal and down to the sacral region. It is made worse by fatigue; relieved, but not always removed, by rest. It is worse before and during menstruation, and if the bowels are costive. It is lessened by friction and kneading of the back.

Not always due to pelvic disease.—Many women suffer from this kind of backache who are free from objective signs of disease; who are tall, upright, well built, not anæmic, plump; who eat well and sleep well; who menstruate without other pain than the aggravation of the usual backache, and have no symptom or sign of uterine disease; and in whom there is therefore no reason for supposing the backache to be due to uterine disease, and no justification for advising the patient to submit to vaginal examination.

Conditions of origin.—This backache often begins when menstruation begins, sometimes not for a few years afterwards. It begins, that is, when the careless activity of childhood becomes restrained by a more hampering costume, by regard for what is considered proper and decorous, and by the sedentary habits involved in the acquirement of what are called "accomplishments."

Conditions affecting it.—It varies in severity from time to time. If the patient goes to a bracing health resort, it gets

better. If from any cause her nervous and muscular tone become impaired, it gets worse. If she marries and has children too quickly following one another, it gets worse. If she suckles too long, it gets worse. Although it is generally relieved by lying down, many women say it is worse when they wake in the morning, and that at this time a hard cushion under the lumbar spine relieves them. Here it seems as if the aching were due to the want of support to the lumbar curve when the patient lies on the flat surface of the bed. The backache from hyperlactation is mainly dorsal, partly from the dragging of the breasts, partly from fatigue of the muscles used in supporting the child.

Its causes.—We know nothing of the morbid anatomy of this backache. I know of no scientific investigation into its cause, and can only speculate about it. Such backache is hardly ever met with in men. Its causes, therefore, if not peculiar to women, occur oftener in women. Chronic backache may be produced in boys and men by masturbation or venereal indulgence; but it occurs in women in whom there is not the slightest reason for suspecting any similar cause.

I believe its immediate cause is twofold:—(1) Partly weakness of the muscles which hold the body erect, so that they ache because the exertion of standing and walking is enough to tire them. This is why the backache is relieved by rest. (2) Why does rubbing relieve it? Because the circulation through the muscles is imperfect, not being helped on by frequent and strong muscular contractions, and hence the muscles ache, just as a limb gets uncomfortable that is kept too long in one position.

Its prevention.—Why are these muscles in women so often weak? The fault is mainly in training, partly in dress. Those who manage boys' schools have long ago seen that a healthy mind depends upon a healthy body. But in girls' schools this principle is only struggling into recognition. Most good schools for girls have their gymnasia, playing fields, etc. But they are often looked on as amusements which may be enjoyed by those who care for them, and let alone by those who prefer something else. During childhood and adolescence, the development of the body should be the first thing. If this is not attended to during

growth, the omission can never be made up afterwards A girl who is backward in her studies, if only she is strong and healthy, will easily make good her mental equipment in after years. Indoor calisthenics and gymnastics are not enough; the sun and the air are wanted, and in cold weather the glow that exercise gives rather than artificial warmth. If development of the muscles by open-air games formed a part of the daily routine of every girls' school there would be fewer women with aching backs.

If this principle were fully recognised, suitable reforms in dress would follow. It is hardly needful to point out how petticoats impede the movements of the limbs, and how stays minimise the activity of the muscles of the back. Medical precepts are weak when counter to the decrees of fashion; but we may at least urge that in the case of growing girls the wearing of stays should be postponed as late as possible, that the muscles of the back may be free; and that in girls' schools the wearing of gymnasium dresses should be habitual rather than exceptional.

Some women suffer from backache not continuously, but very often; and thus there are all gradations of liability to backache, from those whose backs always ache, to those who are like the stronger sex in having backache only from some exceptional cause.

A woman who has a backache is, in a sense, ill, and any treatment that would cure her backache would be well worth doing. It does not follow from this that any treatment that may cure the backache is worth trying. There is no treatment that will remove habitual backache in a weakly woman.

Genital backache.—The pain in the back which disease of the pelvic organs causes is felt usually at and near the top of the sacrum. Such pain as this should suggest inquiry as to the functions of the pelvic organs. If there be disease of these organs, other symptoms will be present, and by physical examination the nature of the disease will be found out. There is nothing in the character of the backache from which the kind of disease causing it can be safely inferred, although different diseases cause different kinds of pain. In backward displacements of the uterus the pain is felt lower down than in most kinds of pelvic disease. In inflammation

of the cervix there is often a pain at the back of the neck, and this has even been said to be pathognomonic of the disease, but it is not. I cannot explain its occurrence, but I have known patients complain of it. Reflected pain from intra-pelvic disease is felt over the sacro-iliac synchondrosis of the affected side. Backache is often unilateral when its cause is not; and in such cases the pain is three times oftener on the left side than on the right, because the left side of the body is weaker than the right.* Pain in the back of pelvic origin is a trouble more from its persistence than from its severity. It is aggravated by prolonged exertion, but not by the mere act of movement. It is generally worse before and during menstruation.

Rectal backache.—Any disease within the pelvis may cause backache, whether of the uterus or its appendages, the vagina, or the rectum. The uterus and rectum adjoin, and many causes of disease affect both. Disease of the womb or its appendages often causes rectal trouble, and the patient may think that there is something wrong with the womb when the rectum is the part that requires treatment. Remember, therefore, that pelvic backache, while often indicating disease of the womb, sometimes indicates disease of the rectum.

Dyspeptic pain in the back.—In many cases the pain in the back that accompanies uterine disease is not limited to the lumbo-sacral region. Pain in the back may come from disease of the stomach. Patients generally refer this pain to between the shoulders. It often extends down the arms. It is generally accompanied by epigastric pain. Its relation to the stomach will be suggested by its seat, and the conjecture confirmed by finding that it has relation to food. It is generally worse after meals, but there are cases in which stomach pain is relieved by food. It is affected by vomiting; sometimes vomiting, by relieving the stomach of irritating matters, will relieve the pain; sometimes the strain of the act of vomiting will aggravate the pain. The diagnosis of the different forms of dyspepsia does not come within the scope of this work.

Dyspepsia often accompanies uterine disease. It has been described as a reflex effect of uterine disease. Patients

* See a paper by the author, "Obst. Trans.," vol. xxxv.

sometimes think that pain due to indigestion is due to disease of the womb. The relation between them is only that they are often both due to a common cause. In many cases of uterine disease treatment of the digestive organs is required, but I know of no kind of indigestion that can be cured by treating the pelvic organs.

Patients sometimes blame their livers for backache. This generally means that the patient thinks indigestion is the fault of the liver. The pain which is really due to chronic liver disease is not usually referred to the back; it is in the right hypochondrium and right shoulder, and is made worse by lying on the left side.

Constipation.—Fulness of the large bowel may cause lumbar pain. Many women are costive, and therefore suffer from lumbar pain. Costiveness is more common among women than among men, chiefly from habit, because the greater modesty of women makes them often refrain from relieving the bowel rather than be seen visiting the place for that purpose. Habitual distension of the bowel leads to impairment of its muscular tone, which in its turn increases the tendency to constipation. Some think that the greater size of the female pelvis favours constipation, because the rectum is less supported, and can therefore be more distended. But I cannot think this important; there is plenty of room in the male pelvis for more fæces than are found in the female rectum.

Long-continued constipation produces other effects than pain in the back. These I go not into here. I only ask you to remember that constipation may cause a pain which the patient may think is due to the womb. Retained fæces often irritate the bowel, provoke secretion from its wall and diarrhœa. Therefore, remember that diarrhœa often indicates that the bowel is full.

Renal pain.—Disease of the kidneys causes backache. If the pain is severe, it is not limited to the back; it is accompanied with irritation of bladder, and with changes in the urine. The kidney will be found tender on palpation. In the renal diseases which cause backache there are often acute attacks of renal colic. There is a condition of the kidney to which women are especially subject which causes

pain in the back, viz., movable kidney. This will be found out by examining the abdomen, and I shall speak of it in the next chapter. The very serious conditions of the kidney comprised under the term Bright's disease cause at most a trifling aching in the back. It is beyond the scope of this work to describe the differential diagnosis of the diseases of the kidney.

Abdominal aneurysm, a disease which causes severe and persistent backache in men, is hardly ever met with in women.

Backache from strain.—You may be sent for on account of recent backache, which the patient attributes to overstrain. Overstrain of the back is more common in men than in women, because the laborious occupations in which overstrain is likely are generally followed by men. But it is possible for backache in women to be produced by overstrain —that is, over-stretching and probably rupture of muscle or fibrous tissue. In women strain may produce backache, by injury not to the back but to the pelvic floor, leading to uterine displacement. This is most important to remember, because a few days' proper treatment immediately after the injury will put it right, and may save the patient lasting discomfort. The treatment consists in rest in bed (for it is only in bed that you can rely upon the patient remaining recumbent) until the injured part has had time to repair the injury.

Lumbago—that is, muscular rheumatism affecting the spinal muscles—may be the explanation of backache. The characteristic feature of this pain is that it is produced by movement. When the patient bends, rises from sitting, or turns in bed, pain is provoked. The affected muscles are tender to the touch. The backache began at a definite date, and often has followed some particular chill or strain.

The treatment is the same in women as in men; therefore I enter not into detail. It consists in local measures to attract blood to the skin, such as mustard, hot bottles, ironing, and general measures to promote perspiration, such as sudorifics, with wrapping in warm blankets, and Turkish baths.

Recent backache.—A patient may complain of backache of quite recent date—a few days or hours only. There are causes of such backache beyond the scope of this work, such as disease of the spine, the muscles, the bones, the meninges, or the cord. It may seem out of place to mention spinal

caries in a work on diseases of women, but it is a fact that from the error of taking backache in a nervous woman for spinal caries "numbers of young women have been confined to a couch for months or years, and their health has been permanently damaged."* Such pain is not likely to be attributed to the uterus, but if it were, a sufficient distinction will be found in the feature that such pain is produced or aggravated by movement of the spine. Uterine pain is not affected by the mere act of movement, but only by the prolongation of exertion.

Pain in the sacro-iliac synchondrosis.—Women sometimes suffer from chronic pain in the sacro-iliac synchondrosis, arising from injury of that joint during labour. This has been described by Gervis.† Sometimes the joint is so injured in delivery that it suppurates during the puerperal state. Injury less severe than this may leave behind chronic pain in the joint. The seat of pain is identified by pressing upon the joint, which is tender, and by taking hold of the ilium, and moving it backwards and forwards, which causes pain. This pain is aggravated by exertion, relieved by rest. As the disease is not fatal, we know not what is the state of the joint. It plainly depends upon delivery, for the disease is not met with in nulliparæ, and the symptoms always date from a confinement.

The treatment consists in rest; fixation of the joint by strapping put round the pelvis; and counter-irritation to the skin over and near the joint, together with such other treatment as the patient's general health may demand. With this treatment the pain can be cured in a few weeks.

Coccygodynia.—This word means pain in the coccyx. This may be associated with some morbid condition that you can detect. You should call such a case by the name of that morbid condition. If you can find no physical sign of disease to account for the pain, then you have to call the disease *coccygodynia.*

Etiology.—Coccygodynia (as defined above) occurs in men as well as in women, but is commoner in women. In women it generally dates from childbirth. During the birth of a

* Buzzard, Quain's Dictionary, Art. "Hysteria."
† "Obst. Trans.," vol. v.

full-sized child the coccyx is extended, and such extension cannot take place without some stretching of the ligaments passing from the coccyx to the ischium. In most women pressure on these ligaments or forcible extension of the coccyx causes pain. It is probable that coccygodynia is most often due to a chronic painful condition—Matthews Duncan thought a rheumatic condition—of these ligaments produced by this stretching. If this be so, explanation is needed as to why the pain is felt in the coccyx and not in the ligaments. When childbirth cannot be invoked as a cause, coccygodynia has been ascribed to constipation and to hæmorrhoids. I must add that if we accept all these explanations, we yet know not why such conditions cause coccygeal pain in some few women and not in others.

Diagnosis.—The patient points to the coccyx, and says the pain is there and nowhere else. She describes it as a continual aching present for weeks or months. It is seldom so severe as to bring the patient for treatment within a few days of its beginning. You find no physical signs of disease.

Prognosis and treatment.—This disease is a neuralgia. The treatment mainly consists in improvement of the nervous tone. Give tonics such as the state of the patient's health may indicate—iron if anæmic, quinine if her appetite be bad, arsenic if she is restless and excitable. Advise plenty of food, and give medicines to aid digestion if needed. Inquire if the patient sleeps well; if not, find out and treat the cause. Regulate the bowels, by diet, if possible—*e.g.* brown bread, oatmeal porridge, fruit; and if these fail, occasional pills, draughts, or powders. The best tonic, if the patient can get it, is change of air to some health resort, regard being had, in choosing the place, to the time of year. If this line of treatment is perseveringly carried out, the patient will generally get well. Sedative liniments, such as one formed by equal parts of lin. opii., lin. aconiti, lin. belladonnæ, and chloroform, may be used; but these are temporary expedients only. They relieve for the time, but do not cure the disease.

It has been proposed to treat this condition surgically by two methods—(*a*) by dividing with a fine tenotomy knife the ligaments all round, close to their insertion into the coccyx;

(*b*) by excising the coccyx. I have seen cure from the latter, not from the former. I should not mention it, were it not that Matthews Duncan was of opinion that, although it had often failed, it was "well worth trying" in inveterate cases. If there is no sign of local disease, be slow to recommend surgical treatment, and careful not to promise too much from it.

Dislocation of the coccyx.—In some cases of coccygeal pain you will find morbid change sufficient to account for the pain. The coccyx may be dislocated *backwards*. The apex of the sacrum and the base of the coccyx, which ought to be in contact, are not. You can feel the base of the coccyx through the skin externally; with the finger in the rectum you can feel the apex of the sacrum internal to the coccyx; and the coccyx is unduly flexed. It may be dislocated *forwards*. The base of the coccyx is in front of the apex of the sacrum; and the coccyx is extended, so that its apex projects under the skin. The dislocation forwards is the more disagreeable, for in it the projection of the point of the coccyx obliges the patient to sit upon one ischium.

These dislocations are very rare, and I know not how they are produced. If you should be called to a woman who has suffered some violence, and you find a recent dislocation of the coccyx, the treatment would be to reduce the dislocation, but I have never seen or heard of a case in which this has been done. Usually by the time these patients seek advice the dislocation is irreducible. In such a case the treatment is simple and successful—viz. to remove the coccyx. It might be possible, by dividing ligaments, etc., to put the bone in its normal position without removing it, but it will be difficult to keep it there, and I know not that the patient is much the worse for losing her coccyx.

Other diseases of the coccyx.—The sacrum or the coccyx may be *fractured* by violence. Either bone may be the subject of *periostitis* or of *caries*. Pain in the coccyx may be caused by either of these conditions. They are not peculiar to women, and their treatment is the same whether in a man or a woman. The description is therefore beyond the scope of this work, and all I have to say is, bear these conditions in mind when consulted about coccygeal pain.

CHAPTER VI.

CHRONIC ABDOMINAL PAIN.

Pelvic pain commonly leads women to think there is something the matter with the womb. I shall enumerate the different kinds of chronic pain that may make women think the womb is diseased, and point out their characteristics. By "chronic" I mean pain that long persists or often recurs, and is not accompanied by acute febrile symptoms.

Pain from tired and stretched muscular and fibrous structures.—This pain is common in women because their muscles are weak, their nerves are sensitive, and they are often anæmic, and therefore nerves and muscles are badly nourished. The pelvic floor aches from the fatigue of supporting the weight of the abdominal contents.

Pain of this kind is dull, aching, not severe, but wearying the patient by its persistence. It is not definitely localised, being referred vaguely to the back and lower abdomen and down the thighs. It is relieved at once, and soon removed, by lying down. Ask the patient whether, on waking in the morning after a good night's rest, she is free from pain. The answer of patients who have this kind of pain only is invariably "Yes." But remember that the presence of this pain does not imply the absence of every other pain; and therefore a patient may have other kinds of pain as well as this, and she may then not be freed from pain by lying down. This is the characteristic pain of uterine descent. It depends partly on the amount of stretching of the tissues, partly on the state of the patient's nervous system. If the patient is sleeping badly, is anæmic, or is getting thin, it gets worse; and if she rests well, takes plenty of food, and the tone of the nervous system improves, the pain gets better, without any appreciable change in the local condition.

Chronic pelvic inflammation.—Pain may be due to chronic metritis, inflammation of the tubes and ovaries, perimetritis, congestion of the uterus from backward displacement.

This pain, like that first described, is referred to the lower abdomen and back, and sometimes down the thighs. It is generally a continuous, dull, aching pain, sometimes described as throbbing. It is remittent, severe pain alternating with slight, the attacks of pain being much longer than the duration of a uterine contraction. It is lessened, but not removed, by lying down. It is more localised than the former kind. As the most frequent seat of pain, the patient will point to a spot about two inches internal to the anterior superior iliac spine. If the uterus be painful, she will refer it to the hypogastrium; in backward displacements of the uterus, to the sacrum. This pain is aggravated by alcohol, by the approach of menstruation, and by sexual intercourse.

Uterine contraction causes pain. This is referred to the lower abdomen and back. Unlike the preceding forms, it is paroxysmal, each attack of pain lasting a minute or more, and being preceded and followed by freedom from pain. It differs also in that it is not relieved by recumbency, but is often said to be worse when the patient is lying down, because a recumbent patient is inactive and pays more attention to what she feels. Pain of this kind is often felt with fibroids. This is the true dysmenorrhœal pain.

The foregoing kinds of pain are all due to *disease in the pelvis*. But the patient may refer pain to the pelvis which has its cause outside it.

Renal pain.—This is identified by the seat of the pain, which is over the kidney, although it often radiates over the abdomen and down the thighs; further, by there being tenderness on pressure over the kidney, and perhaps swelling over the kidney. There will also be vesical irritability, and probably pain in micturition. These latter symptoms are met with in most chronic pelvic inflammations.

The diseases of the kidney which cause pain are:—

(*a*) Renal calculus, in which the pain is paroxysmal and exceedingly severe, often causing vomiting. The urine will probably contain blood and crystals. If the calculus has not passed, but is stopping up the ureter, the kidney will be swollen and tender.

(*b*) Inflammation of ureter from other causes—a rare disease, in which the symptoms will be much the same as in calculus.

(*c*) Pyelitis.

(*d*) Malignant disease of kidney.

In these conditions the kidney will be swollen and tender.

(*e*) **Movable kidney.**—Cases of movable kidney may be divided into three groups. (1) In some it causes no symptoms at all. (2) Sometimes it causes slight aching *pain* in the renal region: there is generally pain in the renal region during menstruation, if at no other time. (3) Sometimes there are attacks of "*strangulation*" of the kidney. This means that the veins get kinked, and congestion of the kidney is the result. This is often the result of violent exertion or rapid movement. There is sudden, severe pain in the abdomen, with distension and tenderness. With this there is faintness, giddiness, sweating, small rapid pulse, nausea or vomiting. The urine is scanty, high-coloured, often bloody. There is little or no fever. The kidney is swollen, and so tender that it can scarcely be examined. The symptoms reach their height at about from the fourth to the sixth day. One of the first signs of recovery is the copious excretion of urine of low specific gravity. The symptoms subside in from one to two weeks.

Aching kidney.—Matthews Duncan described what he called "*aching kidney*": pain in the kidney, independent of pyelitis, stone, mobility, or other disease in the kidney. I have seen cases in which there was renal pain, without physical signs of disease, in young women who were accustomed to drink very little fluid; and this pain has been cured by making the patient drink plenty of water. It has seemed to me a reasonable explanation that the pain has been due to irritation of the kidney by deposit from too concentrated urine—a condition, in fact, of slight gravel, differing only from what is known as gravel in the fact that the urine (or at least some specimens) does not deposit crystals after it is passed. Duncan regarded aching kidney as a neuralgia of the kidney. This may be so, but it is an explanation only to be accepted when everything else has been excluded. Chronic nephritis sometimes makes the kidneys painful. This is identified by the albumin and casts in the urine.

Gastric pain.—The pain may be due to disease of the stomach: atonic dyspepsia, chronic gastritis, gastralgia, gastric

ulcer, cancer of stomach, or other rarer conditions. In these diseases the pain is in some way dependent upon food. In gastralgia it is relieved by food; in the other conditions, produced or aggravated by food, particularly solid food. Pelvic pain has no constant relation to taking food. The patient may think it has, but close observation will show no concomitant variation.

Bowel pain.—The pain may be *in the bowel;* that is, one of the kinds of colic—painful peristaltic action.* Colic may arise from various causes. (*a*) An indigestible meal: if from this cause, it will be of short duration, ceasing when the offending matter has been got rid of. (*b*) Constipation, the pain being in the attempt of the bowel to get rid of hard fæcal lumps. (*c*) Distension of the bowel with flatus, due to decomposition of its contents. The conditions which make the intestinal juices unable to digest food without the copious evolution of gas are in women common, and often persistent and hard to cure. (*d*) Nervous causes: anxiety, fear, distress of mind, not uncommonly produce painful contractions of the bowel. (*e*) Lastly, there is lead colic, recognised by the well-known blue line on the gums. Copper-poisoning also produces colic, but this is rare in ordinary practice.

The pain of *intestinal colic* is distinguished from pain due to disease of the uterus or its appendages by the following features:—

(1) It is a pain which shifts its seat. It rolls about the belly. Sometimes you may get a patient who, when you ask her to point out the seat of pain, will indicate the whole course of the ascending, transverse, and descending colon. Pain of uterine or ovarian origin is in the pelvis.

(2) It is not relieved by position. The pain caused by displacements is removed, and that of uterine or ovarian congestion or of peritonitis is relieved, by recumbency; but produced or aggravated by walking about. This, by distracting the patient's attention, causes the pain of colic to be less felt.

(3) If pressure on the abdomen has any effect on the pain of colic, it is to relieve it. Patients with inflammatory pain cannot bear firm pressure, and it has no influence on the pain of displacements.

* *See* Hawkins, *Brit. Med. Journ.*, Jan. 13, 1906, p. 65.

(4) It is relieved by the passage of flatus, or by the free emptying of the bowel—acts which have no influence on the other kinds of pain.

Peritoneal pain.—In some cases there is a pain which combines the characters of both pelvic and bowel pain. Pelvic peritonitis may lead to adhesions about the sigmoid flexure. During the propulsion of fæcal masses along the colon these adhesions are pulled upon, and thus there is pain *just before* defæcation. There will also be symptoms, or a history, of pelvic peritonitis, and there will be physical signs of this disease. But the pain will resemble colic in being distinctly dependent upon defæcation, and in being pain which shifts its seat as the contents of the bowel move onward, although it may be to a degree too little for the patient to recognise and describe.

Biliary colic.—The pain of biliary colic can hardly be taken for pain due to pelvic disease. Its exceeding severity, sudden onset, and sudden cessation when the stone has passed, its being situated in the epigastrium, and accompanied not only by nausea and vomiting, but by jaundice—all these features mark it off from pain of uterine or ovarian origin.

Visceral neuralgias.—Some pains felt in the abdomen are neuralgic. This kind of pain in an external part is known by being along the course of a nerve, and (in about half the cases) by the presence of tenderness at the spots where the nerve becomes superficial. In the case of visceral neuralgias we have not these marks to guide us, because the viscera are supplied from nerve plexuses which we cannot get at.

In the diagnosis of visceral neuralgias we rely mainly on the following features:—

(1) The absence of signs of disease in the painful part, and, excepting when the pain is present, of any impairment of its function.

(2) The character of the pain. This is usually intermittent or remittent: it occurs in paroxysms, alternating with intervals of freedom from pain or of only slight pain. It may, however, be constant, not paroxysmal, and therefore this feature by itself must not be relied upon. It is often combined with, or alternates with, pain of similar character in other parts.

(3) The effect of treatment. Neuralgic pains vary with the patient's health—getting worse when this is depressed, better under tonic treatment; but this is not peculiar to neuralgia. Neuralgic pain is almost always relieved by alcohol, and is not relieved by position. Inflammatory pelvic pain is aggravated by alcohol and relieved by recumbency.

(4) The personal peculiarities of the patient: her physique, temperament, and habits. The patients subject to neuralgic pains are:—

(1) Those whose nervous systems have been weakened by anæmia, the brain and nerves not being nourished by healthy blood.

(2) Patients worn out by want of sleep.

(3) Persons of originally neurotic temperament, inherited or acquired, generally both inherited and developed by education. A "neurotic temperament" means a too sensitive nervous system. A sensitive nervous system usually goes with a weak muscular system.

Neuralgic pain may complicate pain of other kinds, and then diagnosis is difficult, but important. Pain due to local disease is cured if the local disease is cured; but if the pain is neuralgic, local treatment will be a failure.

CHAPTER VII.

METHOD OF INVESTIGATION.

In this chapter I describe how to investigate common gynæcological cases in private practice. For special purposes there are special instruments and modes of examination, which I shall describe when speaking of the conditions that require them.

Extent of routine examination.—A careful physician examines, as a matter of routine, every important organ before he treats his patient. But female modesty causes the genital organs to be exempted from this routine examination. Other parts are examined thoroughly. But in examining the genital organs regard for the patient's feelings causes examination to be restricted to what is absolutely necessary. If, for instance, by digital examination you find enough to account for the symptoms, there is no need to inspect the parts or to use a speculum or sound. This is the customary English practice, and it is right. Women ought not to be treated as if they were museum specimens.

Interrogation of the patient.—First take down the particulars necessary for identification—the patient's name, age, address; whether single, married, or a widow; the number of children and miscarriages, with the date of the last pregnancy; if sterile, the date of marriage.

The next question to be put amounts to this: What is the matter? From the reply you learn the patient's principal complaint—pain, hæmorrhage, discharge, or whatever else it may be. Question her with the view of defining this symptom. If it be pain, bid her mark out exactly its seat. Inquire as to its kind—whether occasional or constant, whether continuous or paroxysmal. Try to get some measure of its severity—whether it keeps the patient awake at night, or interferes with her social duties or pleasures, or affects nutrition, or makes her go to bed, or vomit, or sweat. Ask whether the patient knows of anything that makes it

better or worse, whether or not it is relieved by lying down, whether affected by menstruation, and, if so, how. Then find out how long the patient has had it, whether it began suddenly or gradually, and in what circumstances. If the leading symptom be hæmorrhage, discharge, or anything else, try in like way to define its character, date, and mode of onset.

Having got a clear understanding as to the principal trouble, then inquire as to the functions of the pelvic organs. Ask as to menstruation, the date of its commencement, its regularity, its quantity, the amount of pain attending it, and the characters of this pain; whether in any of these respects change has taken place since the commencement of the function, and, if so, what and when. Inquire as to any intermenstrual discharge, its character, amount, and date. Ask as to micturition, whether it is painful, or whether too frequent. Inquire about the rectum, whether defæcation is painful, and whether there is hæmorrhage or discharge from the bowel. Ask if there is any irritation, soreness, or swelling about the external parts. If the patient has not told you enough to explain why she seeks advice, and is married, inquire whether marital intercourse is painful.

Ascertain next the state of those functions upon which the general health depends. Ask if appetite is good; whether the patient has discomfort after food, flatulence, pain, or vomiting, and, if so, when; and whether the bowels are regular. Ask if the patient sleeps well or badly, if she suffers from headache, if she is more nervous than she used to be. Inquire if she has gained or lost flesh lately. Ask as to cough, shortness of breath, palpitation, or swelling of legs.

If the symptoms of which the patient has told you give a reasonable presumption of local disease, it is your duty to tell the patient that you cannot treat her properly unless she allows you to make a local examination.

Preparations for examination.—If the patient is to be examined at her home, ask her to be in bed. If at your house, bid her loosen all the bands round her waist, let the garments to which they belong fall as low as her hips, and take off her corsets. Then let her lie on her back on a hard couch, with her knees bent; and draw up her underclothing so as to expose the abdomen.

Abdominal examination.—Look at it to see if it is enlarged. If enlarged, feel if it fluctuates, and if it does, pass a catheter. Percuss it, and note the position and extent of dulness and resonance respectively. Then palpate it. Two things are to be found out by palpation—tenderness and tumour. You ought to be able to press your fingers deep down into the pelvis. If you cannot do this, it may be for one of two reasons—(1) the abdominal muscles are held rigid, because either (*a*) the patient is nervous, or (*b*) the parts underneath are tender; or (2) there is a swelling in the pelvis. Talk to the patient, pressing all the time steadily on the abdomen. If the rigidity is only from nervousness, in a little while the muscles will yield. If there is tenderness or swelling, define its outline. Define surface tenderness by lightly touching or stroking the skin with the head of a pin, and mark out the area over which such touching is said to be painful.

Bimanual examination.—Standing or sitting (according to the height of your couch) on the right side of the patient, place your left hand on the lower part of the abdomen, pass your right hand under her right thigh, and insert the forefinger (previously lubricated with sublimate glycerine 1 – 2,000) into the vagina. Or let the patient lie on her left side. The preferable position is on the back, for in it you can better judge of the relation of parts to the middle line and to abdominal landmarks (Fig. 1). But when the patient is on her side, the vaginal finger can reach a little higher. In either of these positions you can generally find out all you want to know, but you can explore the parts to the right of the uterus better than those to the left. If the case is one in

Fig. 1.—Bimanual Examination.

which you have difficulty in judging of the state of parts to the left of the uterus, go to the left side of the patient, and place your right hand on the abdomen, your left forefinger

Fig. 2.—Fergusson's Speculum.

Fig. 3.—Nest of Celluloid Specula.

Fig. 4.—Speculum Forceps.

in the vagina, or examine in a similar way with the patient on her right side.

The vaginal finger informs you of the condition of the vagina, its size, the smoothness or roughness of its wall, the presence of any tumour; and of the cervix, its position, shape, and consistence. Ascertain by the bimanual examination the size, shape, position, and mobility of the uterus, and the presence or absence of any swelling in the pelvis other than the uterus; if such a swelling be present, its size, shape, position, and mobility. In many cases bimanual examination will tell you enough to account for the patient's symptoms, and there is no need to go further.

Inspection.—Should the patient complain of pain, itching, soreness, or swelling of the vulva, or if your vaginal finger has

perceived any abnormal tenderness or configuration of the vulva, you must inspect this part. Put the patient so that a good light is thrown on it, and separate the labia.

Fergusson's speculum.—If discharge is a prominent symptom, or if you have felt any indication of disease of the cervix or upper part of the vagina, and the nature of the case is not yet clear, you must look at the cervix and vagina with a speculum. The best speculum for most cases is Fergusson's, which you can use without an assistant (Fig. 2). You get the best illumination from one made of silvered glass; but these are apt to break. Made of celluloid, they do not break; they give enough light, and are so thin that four sizes will fit one within the other (Fig. 3). In introducing Fergusson's speculum, remember that the chief resistance that you have to overcome is that of the perineum. Hold the speculum with its longest side backwards. The bevelling allows you easily to get its tip within the vaginal orifice, in front of the perineum. Then press the perineum back, and at the same time move the speculum on. When you have introduced the speculum for its full length, you will generally find the vaginal portion of the cervix lying in the end of the speculum. Clean it with absorbent wool held in the grasp of a speculum forceps (Fig. 4).

The bivalve speculum.—In a few cases the uterus leans so much forward that the os uteri lies against the side of the speculum, and you can only see the anterior part of the vaginal portion. If so, you must use a different speculum. The best for such cases is Barnes's "crescent" modification of

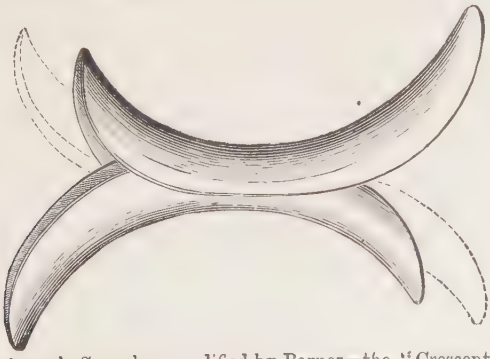

Fig. 5.—Neugebauer's Speculum modified by Barnes—the "Crescent" Speculum.

Neugebauer's speculum (Fig. 5). The extreme divergence of the ends of this instrument sometimes stretches the vagina too much, and hurts the patient; Dr. Roper has

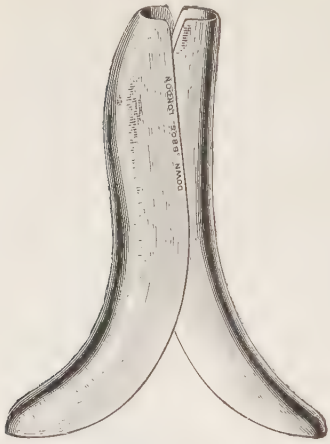

Fig. 6. — Roper's modification of Barnes's "Crescent" Speculum.

Fig. 7.—Sims's "Duckbill" Speculum.

modified its shape so as to prevent this (Fig. 6). But in some cases the great divergence of Barnes's instrument is what you want. The duckbill speculum of Marion Sims (Fig. 7), used in the left lateral semi-prone position, gives you a view of the vaginal portion and the vagina in their natural relations, and enables you to fix a hook or volsella into the cervix, and pull it down so as to inspect it thoroughly. But you cannot do this without an assistant. You also need a table, and, to get the utmost advantage from it, a special table, such as Daggett's, which can be raised at the end on which the patient's pelvis lies, and on the side towards which her back is directed. The patient is placed on this with her hips close to its edge. Her left arm is placed behind her back. Her left thigh and knee are slightly bent, her right thigh is much bent, so that her knee goes against a raised padded side which prevents her from slipping off. The right buttock is held up by the assistant (Fig. 8).

The speculum lifts the posterior vagina wall away from the anterior, so that you then see the cervix and the anterior vaginal wall in their natural relation to one another. In a few cases—such, for instance, as doubtful cancer—this is an advantage; but the cases in which the duckbill speculum gives you

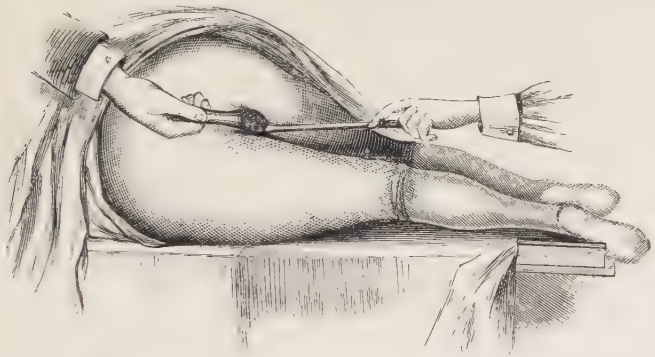

Fig. 8.—Position of Patient for examination with "Duckbill" Speculum.

information of value in diagnosis and treatment which you cannot get without it, are rare. It is excellent for hospital practice, but inconvenient and seldom necessary in private.

The volsella.—Two kinds of volsellæ are sold, one with sharp teeth which stick into the cervix, and one with blunt teeth, which hold the cervix by compressing it. It should fasten with a clip (Fig. 9). The sharp-toothed instrument gives the securer hold, and hurts the patient less, but its points may scratch the vagina or your finger while it is being applied. The blunt volsella cannot do this, but the compression of the cervix is painful. In buying one, see that the teeth fit nicely into one another when the instrument is closed. A tenaculum is sometimes used; it is easier to apply, but holds less firmly than the volsella (Fig. 10). The use of the volsella is to pull the cervix down that it may be seen, and that the sound may be more easily passed, or the back of the uterus examined by the rectum.

The sound.—There are cases in which a swelling in the pelvis is in such close relation to the uterus that you cannot bimanually feel the distinction between them. In such cases you can only find out the position and length of

the uterine cavity by passing a sound (Fig. 11). Occasionally the patient is so fat or so nervous that you cannot

Fig. 9.—Volsella.

Fig. 10.—Tenaculum.

Fig. 11.—Uterine Sound.

by bimanual examination make out where the body of the uterus is, or how big it is. In such a case, if you can exclude pregnancy, you may use the sound to get this information; but you ought seldom to find it necessary. The sound hurts the patient, and is seldom required by one skilled in bimanual examination.

The best sound is that of Marion Sims. To use it, put the patient on her left side. Bend the sound so that its shape may correspond to what you take to be the probable course of the uterine canal and the angle that it makes with the vagina. Lubricate it with sublimate glycerine. Pass the right index-finger up to the os uteri, and with it guide the point of the sound, which is held in the left hand, into the os uteri. Then pass it up till its point is arrested by the fundus. Its point may catch in a fold of the cervical mucous membrane, and its progress be thus arrested. If you think this is the reason it ceases to advance, withdraw it a little way, and pass it up again, keeping its point near the opposite wall of the canal. Use no greater force than you can help.

Fig. 12.—Bimanual Rectal Examination.

The catheter. — If your patient complains of painful or too frequent micturition, look at the meatus urinarius, and then pass a catheter. Do this (1) to get a specimen of urine free from admixture; (2) to notice the presence or absence of great tenderness of the urethra or bladder, and, if present, its site; the presence or absence of stricture; and the size of the bladder. The catheter ought to pass four inches from the meatus. When the catheter touches a healthy bladder you

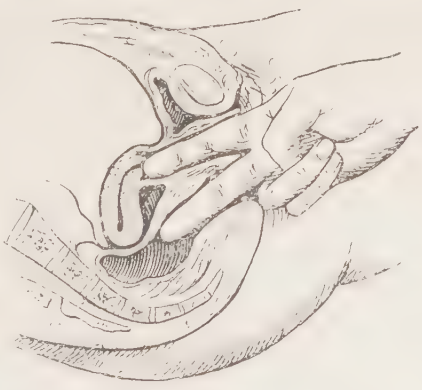

Fig. 13.—Combined Rectal and Vaginal Examination.

can push it on another inch, and the bladder will push it back again when you cease pressing, but in a tender or contracted bladder you cannot do this.

Rectal examination.—If there are any symptoms referred to the rectum, make a digital examination of the bowel. If bimanual vaginal examination has not made you sure as to the state of things, make a bimanual rectal examination (Fig. 12). By this method you can reach rather higher than by vaginal examination, and you can better ascertain the boundaries and relations of swellings behind and at the side of the uterus. Sometimes, especially when there is a lump behind the uterus, you must examine with one finger in the rectum and another in the vagina (Fig. 13).

Examination under anæsthesia.—When examination is very painful or difficult—as from extreme tenderness, or from the youth of the patient—or you cannot define the parts by the ordinary method, examine the patient under anæsthesia. The most perfect exploration of the pelvic organs possible without opening the belly is gained by the bimanual rectal examination, with *two* fingers in the rectum. The whole hand has been introduced into the rectum, but with a hand of average size there is danger of rupturing the bowel. With two fingers you can reach high enough for almost every case.

Part II.

CHRONIC PELVIC PAIN.

CHAPTER VIII.

SO-CALLED CHRONIC OVARIAN PAIN; OR CHRONIC OÖPHORITIS.

Chronic pain in the pelvis, referred by the patient to a spot somewhere over the situation of the ovaries, but without any physical signs of disease, is common in women; and is often described as "oöphoralgia" (*ὠόν*, the ovum; *φορέω*, to bear; *ἄλγος*, pain) or "chronic oöphoritis" because those who use these words think that the pain is in the ovary, and some think that the ovary is in a state of chronic inflammation. But in the majority of the cases described by these names, the pain is not in the ovary: and we know little of any changes that cause the ovary to be painful.

Kinds of Pain.—Pain referred to the lower abdomen may be one of four kinds: peritoneal pain; reflected pain; neurasthenic pain, and hysterical pain. We are now better able to understand pain than we were, owing to the researches of Dr. Head.

1. **Peritoneal pain.**—When the peritoneum is inflamed, it becomes painful. When there is pelvic peritonitis it may extend to the ovary; and thus, in peritonitis, there may be real ovarian pain along with the peritoneal pain. Pelvic peritonitis will be described in Part III. of this work. Here I only mention it to say that in a case of the kind I am describing, the first thing is to eliminate peritonitis. The pain of peritonitis is local: it is felt over the inflamed spot, and not in the back. Pelvic peritonitis leads to the exudation and organisation of lymph, whereby adhesions are produced, the movement of the uterus is restricted, and a palpable swelling is produced. Therefore, you must ascertain whether the uterus is movable or fixed. You ought to be able to push

the uterus up, to pull it down to the vulva, to move it from side to side. You should feel no other lump in the pelvis. If you can feel the ovary at the side of, or behind the uterus, it moves freely when you press upon it. If the uterus and ovaries move freely, and there is no abnormal swelling, the case is not one of chronic peritoneal pain.

2. **Reflected pain.** — In describing this pain, I cannot do better than quote from Dr. Head's article in *Quain's Dictionary*: "When impulses pass up sensory sympathetic nerves from an organ which is diseased, they set up a disturbance in the segment of the nervous system to which they are conducted. Now any second sensory impulse from another part—for example, from the surface of the body —which passes into this same segment will be profoundly altered, for it no longer falls into a normal and quiescent segment of the nervous system, but into one whose activity is already disturbed. The resultant stimulus conducted upward towards the brain therefore differs from that which would have passed onwards from that segment under normal circumstances. The second stimulus will appear to be exaggerated, or may, perhaps, undergo some actual increase in its passage through the excited segment. Thus any otherwise painless stimulation applied to the surface of the body falling within the area supplied by fibres that enter the disturbed segment will appear to be painful, and the skin will be said to be tender."

All abnormal states of the female genitalia are liable to lead to wide-spread reflected pain accompanied by superficial tenderness over the areas supplied by nerves coming from the tenth dorsal to the second lumbar, and from the first to the fourth sacral segments. The ovary appears to be mainly associated with the tenth dorsal.

The tenderness is ascertained by pinching up the skin between the fingers and thumb, or by touching the skin with the head of a pin. When the tender area is reached, the patient winces and says that it hurts.

This reflected pain, with the accompanying superficial tenderness, differs from that of peritonitis in that it is present in the loin and over the sacrum and upper part of the thighs. As a rule it is relieved by deep pressure; with peritonitis

there is no superficial tenderness, and deep pressure increases the pain in proportion to the amount of force used. This reflected pain and superficial tenderness may be felt over the whole of the area supplied by the segment involved—that is, in the case of the tenth dorsal segment, over a more or less horizontal band running from the middle line of the back to the middle line in front; or, if less acute, it may be present only at certain points of maximum sensitiveness. The maximum point is about halfway between the umbilicus and anterior superior iliac spine.

Pain and tenderness in this spot may be produced by disease of the ovary. But it may also be produced by disease of the bowel, uterus, Fallopian tube, liver, gall bladder, kidney, or ureter. Although often spoken of as ovarian pain, it is pain and tenderness of the skin, not of the ovary. Pain felt in what is called the ovarian region may thus be produced by disease of the generative organs other than the ovary: erosion of the cervix, prolapse, retroflexion, cancer, and, above all, disease of the Fallopian tubes. The latter condition is especially to be remembered here, because it so often leads to disease of the ovary and to peritonitis. Inflammation of the Fallopian tubes may at first cause only reflected pain and afterwards peritoneal pain, when the inflammation has reached the peritoneum. The origin of reflected pain is in most cases to be determined by the physical signs.

If you do not find surface tenderness, remember that its absence at one time does not prove its absence at all times. It is most marked, as a rule, just before and during menstruation. A patient often chooses for going to a doctor a day on which she feels better than usual.

If the pain has the characters of reflected pain, then we have to search for its cause. If we find local disease we must treat it. Reflected pain due to recognised local disease has never been called chronic oöphoritis. The diseases which cause pain will be described in further chapters of this book.

3. **Neurasthenic pain.**—Any condition which decreases the resistance of the nervous system, or relaxes the control of the higher centres, will cause wide-spread visceral reflected

pain. Among the common causes which illustrate this law are (*a*) anæmia. Directly a small focus of visceral reflected pain arises in those who are anæmic or chlorotic, the pain and tenderness spread out of all proportion to their primal cause. Moreover, if the cause of the primary focus is removed, the pain does not cease, at any rate immediately. (*b*) The cachexia caused by wasting diseases may also lead to wide-spreading tenderness. Wide-spread pain and tenderness of the reflected type accompany some cases of pulmonary tuberculosis. (*c*) A sudden rise of temperature may produce wide-spread tenderness without our being able to recognise any area of primary disturbance. This condition is produced most easily by true epidemic influenza, in which disease the patient notoriously complains of "pains all over"; and these pains are associated with tenderness of the skin. (*d*) Menstruation is associated with diminished resistance of pain; during menstruation, trivial causes may lead to wide-spread pain and tenderness.

This breakdown of resistance and spread of pain and tenderness may also be produced by mental causes; or may be due to some inherent defect in the nervous system of the individual. Thus the so-called "neurotic" is noticeable for the ease with which a slight visceral cause produces wide-spread pain and tenderness, and patients suffering from neurasthenia are particularly liable to wide-spread visceral pain.

Why usually left-sided.—Neurasthenic pain is more common on the left side than on the right. Various inadequate explanations have been given of this, based on different anatomical conditions on the two sides.

The real reason is that the left side is weaker than the right, not only in muscular strength, but in power of resistance to painful impressions. This is illustrated by the fact that in cancer, which has no preference for the left side rather than the right, pain is more common on the left side.* So it is in displacements of the uterus, although the changes in this condition have no unilateral character;† and in the pain down the thigh from hæmorrhoids.

* *See* Champneys, "Obst. Trans.," vol. xxii.

† *See* a paper by the author, "Obst. Trans.," vol. xxxv.

Neurasthenia is common in women, and therefore I have described it at some length in a previous chapter. Most cases of so-called oöphoralgia or chronic oöphoritis—that is, pelvic pain without local signs of disease—are really cases of neurasthenic pain.

4. **Hysterical pain.**—In a previous chapter I have described the phenomena and physical signs of hysteria. The important fact that I have to insist on here is, that there are many cases in which the so-called ovarian pain is present, and is due to neurasthenia or hysteria, or a combination of them, there being no disease of the ovary or of any other pelvic organ. In such cases local treatment will be a failure, and may be injurious. In this respect there is a difference between neurasthenia and hysteria. In neurasthenic pain, local treatment, if not of a painful or mutilating kind, does no particular harm. In hysterical pain local treatment is the worst possible treatment: it fixes the patient's attention upon her pain, and thus aggravates and extends it. The only exception to this rule is in cases in which the mischief of fixing the patient's attention on a particular part by local exploration and treatment has already been done. In some such cases harmless local treatment of a particular kind may be used as a means of cure by suggestion.

Types of cases.—There are four classes of chronic so-called ovarian pain that I have clinically recognised: cases, that is, of chronic pain in the regions supplied with sensory nerves from the tenth dorsal segment of the spinal cord, without any physical signs of disease in the pelvis. These are:—

1. Cases of nervous exhaustion from childbearing.
2. Cases dependent upon menstruation.
3. Cases due to alcohol.
4. Cases due to frequent sexual excitement without gratification.

How to feel the ovaries.—The way to make sure that you feel the ovary is, for the right ovary, to stand on the right side of the patient (who may be either on her back or left side); put two fingers of the right hand into the vagina, and your left hand on the abdomen. To feel the left ovary, stand on the left side of the patient (who may be on her back or right side); put two fingers of the left hand into the vagina,

and the right hand on the abdomen. Get the body of the uterus between the fingers in the vagina and the hand outside. Running from its upper corner you will feel the cords formed

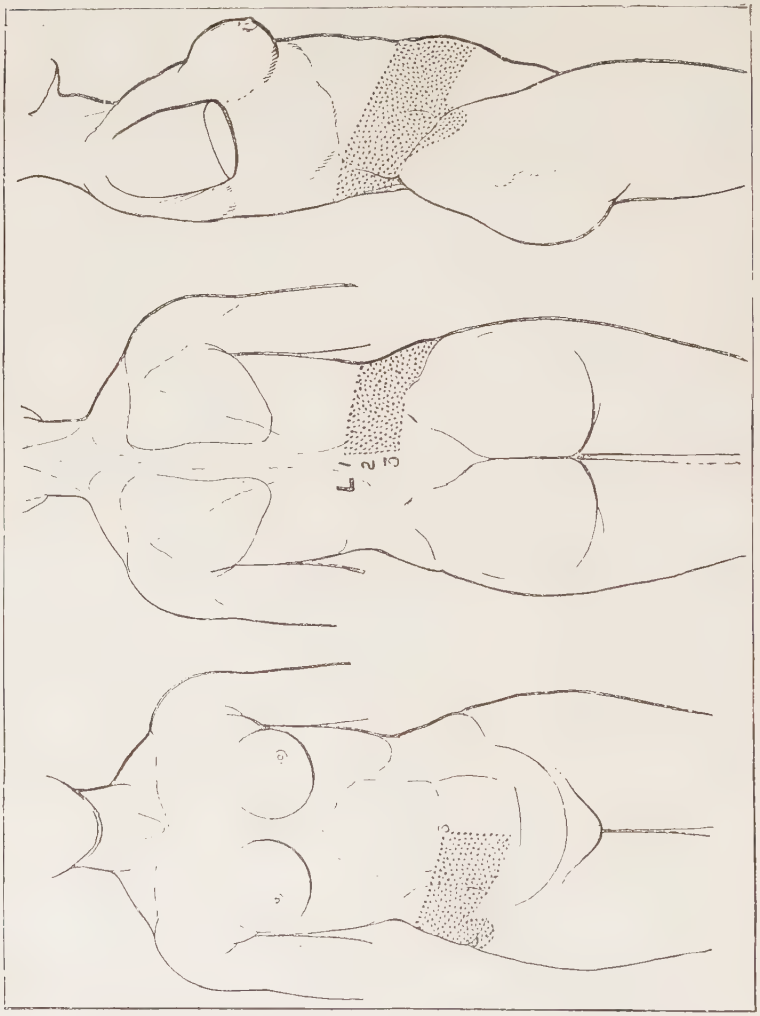

Fig. 14.- Situation of Superficial Tenderness accompanying Ovarian Pain. (*After Head.*)

by the Fallopian tube and ovarian ligament. Follow these outwards with the hand and fingers, and they will guide you to the ovary.

A patient whose ovaries are tender, when you try to do

this will make her abdominal muscles so rigid that you cannot do it, even if the patient will tolerate your trying. In most cases you will not be wrong if you identify the ovary by its shape, size, position, and tenderness, without tracing out its connection with the uterus; but if in doubt as to the condition of the appendages, examine under anæsthetic.

Pathology: why thought inflammatory.—Cases of "ovarian pain" have been a source of perplexity to students, because this morbid condition has been called by different names. Some call it "chronic ovaritis," and as reasons for doing so they point to its persistent character, and to its relief by treatment such as cures or relieves inflammation. Further, the common "ovarian" pain is a dull, aching, throbbing, continuous wearing pain, not an intermittent pain like neuralgia; it is lessened by lying down, while neuralgia is not affected by position; and it is made worse by alcohol, which relieves neuralgia. In some cases it is produced by alcohol.

Why not inflammation.—We are ignorant of any morbid changes in the painful ovary. This so-called chronic ovaritis is a common disease, but the experience alike of those who make *post-mortem* examinations and of surgeons who often open the abdomen shows that inflammatory change in an ovary without adhesions is a rare thing. We know nothing of chronic inflammation of freely movable ovaries. Therefore I think that it is better to speak of these cases as *ovarian pain*, or *oöphoralgia*, if a word formed from a dead language be preferred to an English one. *Ovarian irritation* is another term sometimes employed.

Tubal inflammation formerly taken for ovarian inflammation.—Cases have been described in which, with symptoms something like those I have enumerated, a lump has been felt behind and to the side of the uterus, but larger than the ovary ought to be, and tender; and under treatment the symptoms have disappeared and this lump has got smaller.* The inference has been that the swelling was an ovary enlarged by inflammation. I have seen such cases. As such patients got well without abdominal section,

* *See* Barnes, "Diseases of Women," 1st edition, p. 290 *et seq.*; also Duncan, "Clinical Lectures," 4th edition, p. 217.

this diagnosis was neither verified nor disproved. But anatomists and surgeons who know little or nothing about chronic inflammation of movable ovaries find that inflammation of the Fallopian tubes, and their distension with fluid, are common. I think that the cases which, before we knew so much about the diseases of the Fallopian tubes as we now do, were described as inflammation of the ovary were really cases of inflammation, swelling, and distension with fluid of the Fallopian tube.

Changes in the ovary supposed to be causes of pain.—Two conditions are seen in the ovary which have been described as morbid changes due to inflammation, and as being the cause of pain in the ovary. One consists of enlargement of the organ by the presence of numerous small cysts together with much dense fibrous tissue between the cysts. This has been given the name of "*sclero-cystic disease*" of the ovary, and has been said to be the cause of pain.* This disease is commonly seen with large uterine fibroids, and such patients, unless there has been peritonitis, are usually free from pain. With small ovarian cysts, pain is rare.

Cirrhosis of the ovary.—In this condition the ovary is smaller than usual, wrinkled on the surface, and apparently composed of fibrous tissues: it has, in fact, come to resemble the ovary of a healthy old woman. If this senile degeneration occurs early in life it is considered pathological, and if the owner of such an ovary complains of pain, there are those who would consider that the shrunken ovary was the cause of pain. Whatever may be the case in the young, it is certain that in the elderly these shrunken fibrous ovaries do not cause pain. If the prematurity or the extent of the shrinking be the criterion of its pathological nature, we need to know the normal rate and degree of the shrinking of the ovaries which goes on in healthy women; and this, at present, we do not know. An account of the age changes in healthy ovaries would be very instructive; at present it is an unfilled gap in our knowledge. This shrinking and wrinkling of the ovary has been called "cirrhosis of the ovary" because it has been supposed to be a disease pathologically resembling

* For references *see* a paper by the author, "On So-called Chronic Ovarian Pain," *Brit. Med. Journal*, *Oct.* 22, 1904.

cirrhosis of the liver and granular kidney; it is therefore pertinent to point out that cirrhosis of the liver and granular kidney are neither of them painful diseases, nor, I believe, is cirrhosis of the ovary.

Relation of sclero-cystic disease to "cirrhosis."—Sclero-cystic disease of the ovary has been described under the title of chronic oöphoritis, and it has been said that its final result is either cystic disease or else atrophy of the follicles, with shrinking and thickening of the parenchyma, so that ultimately cirrhosis of the ovary arises. That a small sclero-cystic ovary may grow into a cyst large enough to require removal on account of its size, I think is very likely. But I know of no evidence that the sclero-cystic condition is inflammatory. Nor do I know of any evidence that a sclero-cystic ovary ever becomes a cirrhotic one. I know of no one who has performed abdominal sections at different dates upon the same patient, and found the ovaries at the first sclero-cystic, and at the later cirrhotic. Nor do I know anyone who, by repeated bimanual examinations spread over a long period of time, has watched ovaries, at first large and tender, gradually become small and tender. Unsupported by observations of this kind, the statement is a theory devoid of foundation in fact. And it is a theory at variance with what we see in every other part of the body: for elsewhere, when an inflamed part that has been swollen and tender begins to shrink, and fibrous tissue forms in it, pain ceases.

What cirrhosis of the ovary is.—The fact is that no one ever supposed cirrhosis of the ovary to be a disease until surgeons began to open the abdomens of nervous women because they had pain. They did this on the theory that the pain was in the ovary, and, possessed by this theory, they took any unusual appearance in the ovary to be disease, and disease causing pain. Many operators now admit how disappointing the results of such operations are. They are disappointing because, in these cases—that is, cases of pain in women who have no physical signs of disease—the pain is not in the ovary, or caused by the ovary: it is in the nerves of the skin, and is due to neurasthenia or hysteria. The only cases in which pain of this kind is cured by oöphorectomy are the cases in which the pain is secondary to dysmenorrhœa.

These are cured, but not at once, within a few months. They are cured, not because diseased organs have been removed, but because menstruation has been stopped.

Supposed causes of chronic inflammation of the ovary. —Acute oöphoritis occurs in severe infectious diseases, in typhus, scarlatina, etc.; in childbed; from operations on the genitals performed with imperfect antiseptic precautions. It has been asserted that acute oöphoritis in childhood may make its effects felt in disturbances of menstruation at puberty;* but no evidence of this has been adduced. Nor have we evidence that an acute oöphoritis in childbed, after operations, from gonorrhœa, etc., lingers on as a chronic disease without adhesions. Chronic oöphoritis has been said to depend upon debility in early life; imperfect development; hereditary disease such as a tendency to phthisis; syphilis; or upon what may be called a traumatic cause not severe enough to produce acute inflammation, such as suppression of menstruation, over-exertion, sexual excesses, mental shock, etc. Some of the causes named may produce catarrh of the tubes, and so salpingo-oöphoritis; and some of them may favour the occurrence of neuralgic pain in the ovary. No evidence has been produced of a chronic oöphoritis without adhesions.

From morbid anatomy we learn little as to why a movable ovary comes to be painful and tender. I take now the subject from its clinical side. The cases of ovarian pain that I have seen fall into the following groups. I speak of cases in which there is persistent ovarian pain without any other morbid condition that can be detected by examination.

1. **Chronic pain following childbirth.**—This is the commonest kind. It occurs chiefly in women who have had many children quickly. Such patients have generally lost flesh. They usually suffer also from atonic dyspepsia, loss of appetite, feeling of weight and fulness after food, loss of appetite for breakfast, costiveness. They are long in going to sleep, wake frequently, have disagreeable dreams. They are nervous, reflex irritability is increased. They cannot concentrate attention, and memory is bad. Many suffer from headaches and facial neuralgia.

* *See* Prochownick, "Arch. für Gyn.," Band xxix.

These symptoms are those of nervous exhaustion produced by the strain on the nervous energy of pregnancy, labour, and suckling, together with the worry and disturbed rest which the care of a young family involves. The morbid states form a vicious circle. Want of sleep exhausts the nervous system, and nervous exhaustion prevents sound sleep. Weakness of digestion due to nervous exhaustion impairs nutrition, and the discomfort after food helps to prevent sleep. The nervous exhaustion causes the pain, and the pain, in its turn, aggravates the nervous exhaustion, partly by the direct effect of the pain, partly because it suggests to the patient fear of worse evils to come.

Other local symptoms are variable, because they mostly depend on other conditions co-existing—bearing-down pain; pain in micturition; too frequent micturition; leucorrhœa. The symptoms are worse before and during menstruation. The pain is relieved by lying down, made worse by exertion. Menstruation may be altered, but there is no regular or constant alteration.

If there is any morbid change in the ovary, it probably is that the venous congestion, produced by the great vascular development of pregnancy, persists. I am not aware of any accident of labour or illness of childbed that is a regular antecedent of this pain, although a woman who has had a "bad time" is more likely to get ill than one who has had an easy labour and lying-in. Its nearest analogue in the male sex is the aching of the testicle which often accompanies varicocele, and, like this form of ovarian pain, is often produced by the excessive exercise of the genital organs.

Treatment.—(i.) *Rest:* physical, mental, and emotional. Recumbency, which relieves the pain; sleep; and freedom from worry. The best treatment is to take the patient from home. If you tell a man who needs rest to stay in bed at home, and he does it, your purpose is attained. But not so with a woman, for her work is in her home. If she is poor, get her into a hospital. If she is above the hospital class, and has friends who can receive her and treat her as an invalid, urge that she go to them. Failing this, arrange for her treatment in a surgical home, of which there are

many in large towns. Wherever it be, she must lie in bed. I do not say that patients never get well if treated at home, but they get well more quickly away from home. If you cannot get the patient to leave home, you must do your best for her where she is.

In the treatment of disease attended with nervous exhaustion, galvanism and massage are often recommended. These are in themselves good, because they prevent the effects of inaction on the muscles, and they may make the patient hopeful and her days in bed less monotonous. But they are not necessary. If the patient can be cured at all, she will get well before the inaction has lasted long enough to produce any serious effect on her muscles. Although some patients may like these adjuncts, others may be worried and annoyed by them. If the patient be not affluent, they are hardly worth their cost.

(ii.) *Sleep.*—See that the patient sleeps. Do not give opium; it will confine the bowels and take away the appetite. Nor chloral; it will depress the patient. If you make the patient depend upon opium or chloral for sleep, you may lead her to the opium or chloral habit, either of which is a worse disease than oöphoralgia. Give sodium bromide, ten or fifteen grains three times a day. This will lessen reflex irritability. It will not procure sleep at once, but before the patient has taken it for a fortnight she will be sleeping better, and feeling less nervous. Do not continue it for more than a fortnight, or it will make her low-spirited, languid, and tired. This salt depresses less than any other bromide, and taken for this short time and in this small dose seldom brings out a rash.

(iii.) *Appetite.*—Combine the bromide with an alkaline carbonate and a bitter. With rest and sleep, appetite will improve. If, when sleep has been procured, appetite is still deficient, give tonics—quinine, nux vomica, iron, etc., in various combinations. Let the patient's inclination be studied as to times and kinds of food, so that as much easily digested food as possible shall be taken. The patient may eat better if she takes a little wine or beer with her meals. This should be limited in quantity and prescribed with caution, because nervous women who are prescribed alcohol are more

likely to become addicted to its excessive use than persons who are strong.

(iv.) *Counter-irritation.*—One way of directly relieving so-called ovarian pain is by counter-irritation. This was an argument in favour of the view that the condition is inflammatory. The kind of counter-irritant is not important. Order a blister, 2 in. by 2 in., to be applied on the abdominal wall above the ovary every three or four days. Lin. iodi, painted over the lower abdomen twice a week until the skin is sore, is useful. Martindale's lin. capsici co. is a good application; it produces redness of the skin, which quickly passes off, so that it can be used daily.

(v.) *Hot vaginal douches* are commonly prescribed. They keep the vagina clean: if hot (112° F.), they may act as a counter-irritant applied to the vagina, and I see not how they can do harm. I have seen cases treated for some time without the vaginal douche in which the addition of the douche was followed by improvement.

(vi.) *Drugs.*—There is no drug that will take away pain from neurasthenia. If the patient be anæmic, give her iron; but many of these patients are not anæmic.

(vii.) *Conjugal life.*—If the patient is at home, it may be that the pain she suffers in sexual intercourse is a serious drawback to her. On the other hand, she may have little or no pain, or may prefer to put up with it. Therefore give no injunctions about sexual intercourse unless you are certain they are needed. Ask the patient whether she would like you to say anything to her husband about it, and, if so, support her wishes with your authority.

(viii.) *Treatment of uterine disease.*—Ovarian pain may depend on or be complicated with disease of the uterus, with erosion and inflammation of the cervix, or with a displacement. If an erosion is present, it should be treated and cured. If there is any descent of the uterus, a pessary should be worn. The indications for these modes of treatment I describe elsewhere. Manipulations of the parts *per se* do harm: but if treatment is needed, the evil must be put up with for the sake of the good that will come.

How long should this treatment be continued?—If the patient has not been ill long—say, not longer than six

months—and the treatment outlined above has been carried out, she will probably be cured in a few weeks. Ask for two months' treatment; the patient will probably be well before that. In slight cases a few days' treatment may be enough. If the patient has suffered long—say, for two years or more—she may not be well at the end of two months' treatment; but she will be better. She may be improving each week. If so, prolong the treatment until either she is well or she ceases to further improve. If improvement ceases, remember that long inaction weakens the muscles; that a self-centred life has a bad influence on the patient; that her abstention from family duties may be an injury to those to whom she is bound, and re-act upon her own happiness. If two months' rest does not remove ovarian pain, rest has done all that rest can do.

Try next to invigorate the nervous system. Change of air and scene is the most potent tonic. In the choice of place be guided by the patient's former experience of health resorts, her personal preference, and the season of the year. Above all, tell the patient as emphatically as you can that she has no organic disease. Direct her so that her life shall be easy—regular sleep, regular meals, plenty of sunlight and fresh air. Tell her that treatment has done all that it can do, and that she must allow time for its full effect; that in time she will get well.

2. **Primary ovarian menstrual pain.** Slight pain before and with menstruation is common from the congestion of the pelvic organs which precedes menstruation, and is relieved by the menstrual flow. In some neurasthenic or hysterical women it obliges the patient to lie up.

Causes.—In some cases the uterus is imperfectly developed. The association of primary ovarian pain with smallness of the uterus has led to the conjecture that the ovaries may be imperfect also, and therefore ovulation be painful. But, if so, we have no knowledge what the developmental effect is. Imperfect development of the uterus does not cause menstrual pain, for it is often seen without it. I have seen patients thus suffering each month who were of full average height; not anæmic, but florid and well nourished; who looked sound in body and mind,

and in whom the most careful inquiry into their history revealed nothing that might have been expected to cause disease or interfere with development; who had been well fed; had led what seemed to be a healthy life; had been educated according to modern methods, at schools provided with gymnasiums and facilities for outdoor games; whose frankness and simplicity of speech and demeanour forbade any suspicion of sexual malpractices; and who yet suffered so much each month as to be laid aside from active life for some days.

Treatment.—If the pain be of recent origin, or has recently got much worse; if its appearance or aggravation has followed some influence capable of lowering health, such as over-work (mental or physical), anxiety, depressing emotions, shock (nervous or physical), treat the case as I have advised for ovarian pain following childbirth.

Hysterical pain is influenced by the amount of attention that is paid to it. I have known it cured—or rather the patient cease to complain of it—when she was told there was nothing the matter. I have known a patient who was laid up every month cease to complain when she was told that an operation which was dangerous, and which would prevent her from becoming a mother, was the only thing that would cure her. I have seen cases submit to treatment for long periods without benefit, and then discontinue treatment in despair, and a few years afterwards be quite well.

Therefore be not confident that you will cure the patient by treatment, and remember that she may get well without treatment. Remember, also, that prolonged confinement weakens the nervous tone, and that local treatment directs attention to the parts treated, both effects being harmful. If you are certain that the pain does not depend on a morbid change in the ovary, tell the patient that she has no local disease, and that the only cure is in the strengthening of the nervous system which will follow completion of growth, provided that she lives a healthy life.

3. **Ovarian pain secondary to dysmenorrhœa.**—In dysmenorrhœa of the spasmodic kind, associated with sterility, if it remain untreated, or if treatment fail, reflected pain sometimes becomes added to the uterine pain, and gradually comes

to last for a longer and longer part of each month, till at length it may become continuous. This kind of ovarian pain is only to be cured by curing the spasmodic dysmenorrhœa.

This is the one and only kind of pelvic pain that can be cured by removing the ovaries. When menstruation has been stopped the pain gets well; not immediately, but within a few months. But the ovaries are not diseased: the cure is effected, not by removing a diseased part, but by stopping menstruation.

4. **Ovarian pain from alcohol.**—Ovarian pain from alcohol is usually met with in women no longer young. You may suspect alcohol from the patient's fat, florid, and puffy appearance, and your suspicion will be strengthened by failure to find any other cause. The pain dates neither from menstruation, nor from marriage, nor from childbearing, but has come on gradually during later years. A blunt question as to whether the patient takes too much will of course be answered in the negative. But if you systematically inquire into every detail of the patient's diet, both from her and (out of her hearing) from her friends, you will get the facts as to alcohol without suggesting that that is the point you are specially aiming at. This kind of pain is cured by inducing the patient to leave off alcohol.

5. **Sexual causes.**—(*a*) Certain modes of preventing pregnancy which prevent the female from completing the sexual act cause in some women neurasthenic pain. This kind of ovarian pain is cured when the practice is left off. Fruitless attempts at intercourse by an impotent husband may have the same effect. (*b*) Excessive sexual intercourse has been in books blamed for ovarian pain. The sexual act produces a physiological congestion of the parts. When this congestion is excessive, its usual result is hæmorrhage from the uterine mucous membrane. This hæmorrhage is, in a sense, physiological, for it is nature's way of relieving the congestion. If the congestion is not thus relieved, ovarian pain may be produced. What excess is depends upon the patient; one may be made ill by what would not hurt another. My impression is that a frequency of intercourse not greater than the patient's wishes demand does not do harm, but that frequent submission to inter-

course when desire is absent and the act incomplete leads to pain. You will be guided to this source of pain by the history, which is, that the patient's ill health dates from soon after marriage, and that if since marriage she has been away from home by herself she has been better. An interview with the patient's husband will probably both verify the cause and enable you to cure the symptom. (*c*) Masturbation and ungratified sexual desire in the unmarried have been stated to be causes of pelvic pain.* We cannot ask such patients about these things, and if we did, we might not always get a reply. Therefore we know nothing about them, either as to their frequency among young women or their effect on health. I think them not common. I refer to it because marriage is sometimes advised for pelvic pain. If such advice is appropriate, the patient does not need it. If it is given conjecturally, it is more likely to be wrong than right; and, if wrong, will do much harm. If asked as to the effect of marriage upon health, make no statement unless to the mother or a married friend of the patient, to whom you can explain that this depends upon the presence or absence of sexual feeling in the patient. There is a stronger reason against volunteering advice on the subject of marriage, viz. that there are other things to be considered more important than its effect upon pain.

.6. **So-called "exanthematic oöphoritis."**—It is known that in acute febrile illnesses suppuration of the ovary occasionally occurs, for it has been found after death. Cases have been described, and I have seen such, in which patients with chronic ovarian pain say that they have had it ever since some severe febrile illness. It has been supposed that in these cases there may have been during the illness an acute inflammation of the ovary which has ended in imperfect recovery, leaving the ovary painful. This view is purely conjectural, for no one has yet demonstrated any morbid changes in the ovary in such cases.

It is not uncommon, after an acute illness, for young women to complain of pelvic pain. The nervous system is weak, and the patient suffers from neurasthenic pain. Rest,

* *See* Balls-Headley, "The Evolution of the Diseases of Women," *passim*.

liberal diet, and tonics remove this pain in a few days. Possibly if this pain were left untreated, it might become inveterate. My experience is limited to cases of these two kinds—(*a*) long-standing pain dating back to an illness; (*b*) recent pain quickly cured. I have not seen the one pass into the other.

The Surgical Treatment of Chronic Ovarian Pain.—In chronic pelvic pain with neurasthenia, effects follow one another in a vicious circle. The patient feels more severely the pelvic pain because her nervous system is too sensitive. The persistent pelvic pain keeps the nervous system weak and sensitive, and further weakens it. But if the pain be due to menstruation, the patient will, after the ovaries have been removed, in time lose her pain. The objection to this course are its effects upon fertility, and upon sexual feeling, which influence the patient's prospects of marriage, and her happiness in marriage. The weight of these objections varies according to the patient's age and condition. The operation should not be done without putting the objections to it before the patient, who must herself judge of their importance. It is hardly needful to add that other treatment should have had adequate trial, and the medical attendant should have convinced himself that it is a failure.

Attempts have been made, on the hypothesis that the pain was in the ovary, to cure pain by surgical means not involving the complete suppression of ovarian function. Pozzi, of Paris, introduced first "ignipuncture," then "resection" of painful ovaries. The results of ignipuncture have been disappointing. Resection of the ovaries—that is, cutting out a large wedge of ovarian tissue, and sewing together the opposite surfaces of the gap left, produces temporary benefit; but in most cases the pain returns.

Prolapse of the ovaries.—The ovaries are sometimes tender; one or both may sink down behind the uterus, so that it can be pressed upon either by way of the vagina or by way of the rectum. If an ovary is thus displaced and tender, there will be pain (1) on sexual intercourse, and (2) during the passage of scybala: in each case from pressure upon the tender ovary. The pain is often described as lasting an hour or so after the cause which provoked it. There is no

anatomical change that we know of in the ovary in such cases. Such prolapsed and tender ovaries are only found in neurasthenic women. When the nervous energy of such women is restored, their ovaries cease to be tender, even if they remain prolapsed. The treatment is (1) to protect the tender ovary from contact by a thick soft ring pessary; (2) to prevent the formation of scybala by keeping the bowels slightly relaxed; (3) to help the patient to eat, sleep, and rest.

CHAPTER IX.

CHRONIC UTERINE PAIN; SUBINVOLUTION AND CHRONIC METRITIS.

CHRONIC pelvic pain may be a continual aching of the uterus. Just as ovaries have been thought on clinical grounds to be inflamed, so it has been thought that a uterus the seat of chronic pain must be inflamed; and the condition

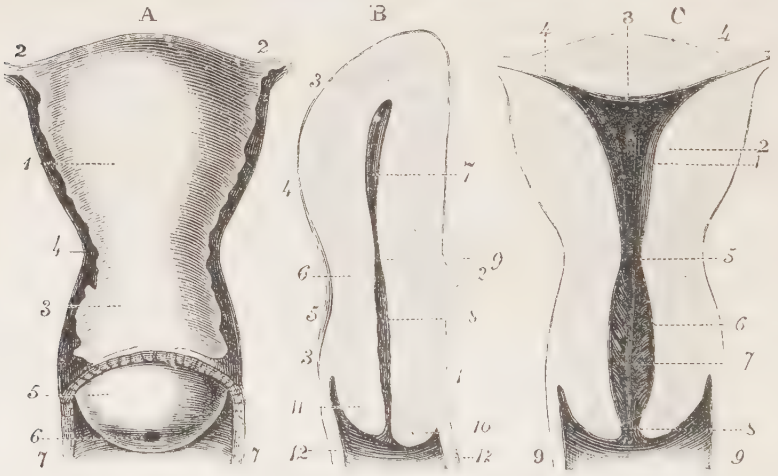

Fig. 15.—Virgin Uterus, Æt. 22. (*After Sappey.*)

A, Anterior aspect. B, Median section. C, Transverse section.

A. 1, Body of uterus; 2, 2, its superior angles; 3, neck; 4, isthmus; 5, vaginal portion of neck; 6, os externum, small and circular; 7, vagina.

B. 1, Profile of anterior surface of uterus; 2, vesico-uterine cul-de-sac of peritoneum; 3, 3, profile of posterior surface; 4, body of uterus; 5, neck; 6, isthmus; 7, cavity of body; 8, cavity of neck; 9, os internum; 10, anterior lip of os tincæ; 11, its posterior lip; 12, 12, vagina.

C. 1, Cavity of body; 2, its left border; 3, its upper border; 4, 4, its lateral infundibuliform angles; 5, os internum; 6, cavity of neck; 7, arbor vitæ of posterior wall; 8, os externum; 9, vagina.

has been called "chronic metritis." Such aching uteri are generally large, because involution after childbirth has been incomplete. An account of this disease therefore comprises four things:

1. The involution of the uterus.
2. The causes of subinvolution.

3. The effects of subinvolution.

4. The chronic uterine aching known as chronic metritis, chronic engorgement, and chronic areolar hyperplasia.

1. **The involution of the uterus.**—On the day after delivery the uterus weighs from a pound and a half to two pounds and a half, and its fundus reaches as high as the umbilicus. Its return during the lying-in period nearly to the dimensions it had before pregnancy is called "the involution of the uterus"

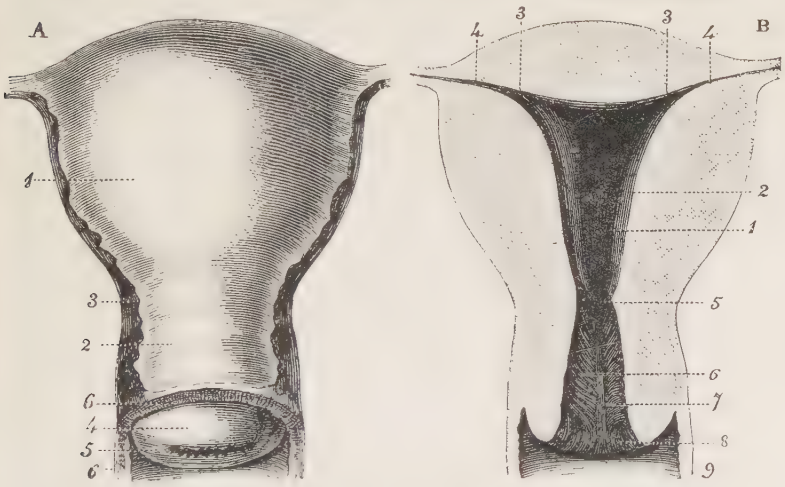

Fig 16.—Multiparous Uterus, with the slight incompleteness of involution which is usual, Æt. 26. (*After Sappey.*)

A, Anterior aspect. B, Uterine cavity.

A. 1, Body of uterus; 2, the neck; 3, isthmus; 4, os tincæ; 5, os externum, a transverse fissure, its margin notched; 6, 6, vagina.

B. 1, Cavity of body; 2, left lateral border; 3, 3, upper border; 4, 4, its upper or lateral infundibuliform angles continuous with the Fallopian tubes; 5, its lower angle forming the os internum; 6, cavity of the neck; 7, arbor vitæ; 8, posterior lip of os externum; 9, vagina.

(Figs. 15, 16). Generally by the twelfth day after delivery the fundus uteri is no longer above the pelvic brim. Two weeks after delivery the uterus weighs about half a pound, and three weeks after delivery from four to six ounces. Involution is in most cases complete at the end of two months, sometimes at the end of a month, sometimes it takes three months.

How involution is effected.—We have no exact knowledge of the changes which take place in the *peritoneal* covering of the uterus. It becomes smaller, and the wrinkles present in it after delivery are smoothed away, and this is all we know.

It is stated in most text-books that the *muscular fibres* of the pregnant uterus undergo fatty degeneration during the lying-in period, and are thus removed, new ones being formed in their stead. The fact of fatty degeneration rests upon observations by Kölliker, supported by those of Luschka, Sänger, and Mayor; but it has been denied by Robin. The theory that the old muscular fibres are destroyed and new ones developed was originated by Kilian in 1849. These statements were based on few observations; most of these were on the uteri of women who had died from disease, and were made after decomposition had begun; and at the time they were made histology was in its infancy. The subject has been more recently studied by Dr. T. A. Helme* with the advantage of modern histological methods. He observed the process in the rabbit, and examined many specimens immediately after death, and at all stages of the process of involution. His results far outweigh the few and imperfect observations quoted in support of the text-book account. Helme finds no fatty degeneration. There is atrophy—that is, diminution in volume—of the muscular fibres. There is not, as in a pathological atrophy, degeneration of the muscular fibres and increase of connective tissue, but a shrinking alike of muscle and connective tissue —a physiological retrogression. There is probably a chemical change: a sort of peptonisation which makes the contents of the muscle cells more soluble, so that they can pass into the lymph stream; but no fatty change. The atrophy goes on simultaneously and equally at all parts of the uterus alike. There are no groups of degenerated cells found amidst healthy tissue. Helme has noticed two stages. During the first thirty-six hours the muscular fibres, which at the end of pregnancy are remarkably translucent, become cloudy, and rapidly diminish in volume. Then follows a more gradual shrinking. Helme finds no evidence of old fibres being destroyed and new ones produced. The only change is that large fibres become small.

Observations have also been discrepant as to the changes in the *connective tissue*. Fatty degeneration, atrophy, development of new connective tissue, have each been

* "Trans. R. Soc. Ed.," vol. xxxv., part 2, No. 8.

described. Helme finds that the connective tissue first becomes granular, and then gradually diminishes and disappears.

During the last few days of pregnancy and the first few days of involution giant cells with many nuclei are to be seen. They are formed by the coalescence of single cells, which are probably leucocytes. These giant cells are not seen after the sixth day of involution Their function is probably to eat up the waste material lying about them; granules from connective tissue, or rather in solution from muscle cells.

Permanent changes take place in the *vessels*. The veins are compressed by the contraction of the muscular bundles. Some of them become pervious again. In others their endothelium comes to present a hyaline and granular appearance, and the vessel is gradually obliterated, and disappears. In some of the veins there is a proliferation of the intima, so that the vessel wall becomes permanently thickened. In some of the arteries there is a hyaline and granular appearance of their coats; some become obliterated; in the larger ones there is a proliferative endarteritis, growth taking place both from the endothelium and the sub-endothelial connective tissue. At the end of involution the connective tissue around the arteries is increased in quantity, the arterial muscular wall is greatly hypertrophied, and the inner wall considerably thickened. On section, the arteries project beyond the surrounding surface, and present thick yellowish white walls, more opaque than the tissues around. This state of the arteries was described by Sir J. Williams in 1882* as "the strongest presumptive evidence of parity" that we possess. But Dr. Jessie Macgregor says she has seen it in a childless woman of twenty-three.†

In an ideal case involution should go on till the uterus is reduced to the same size that it was before pregnancy. This seldom occurs. It is so common for involution to be not quite complete that in text books of anatomy it is stated that the parous uterus is normally larger than the virgin uterus. When involution is thus incomplete, the condition of the

* "Obst. Trans., vol. xx.

† "Pathology of the Endometrium," Edinburgh, 1905.

uterus is called *subinvolution*. In a few cases the involution goes on to such a degree that the uterus becomes smaller than it was before pregnancy. This is called *superinvolution*, or *puerperal atrophy of the uterus*.

The morbid anatomy of subinvolution.—We know of no constant difference, except in size, between uteri which a few months after delivery still remain large, and those which have returned to the ordinary size of the unimpregnated uterus. General enlargement of the uterus with pelvic pain and other symptoms is known as "chronic metritis," and some writers have described subinvolution and chronic metritis as being identical. General enlargement of the uterus persisting long after delivery was described by Klebs* under the name of "diffuse hyperplasia of the uterine parenchyma." He says that in some cases hypertrophy of the muscular fibres is present; in others, hypertrophy of the connective tissue bundles. The more the latter are developed the firmer is the tissue. He says that this hypertrophy has been regarded as a result of chronic inflammation, and that it cannot be denied that in many cases the inflammatory changes in the mucous membrane are present, but that in many there is no clinical proof of inflammation having been present, the condition having developed without any symptoms. Both inflammatory and non-inflammatory forms have in common the enlargement of the uterus and increase in its blood supply. Klob† described chronic enlargement of the uterus as being due to a diffuse growth of connective tissue. He said that the uterus was at first congested and turgid, the connective tissue being immature; that the longer the disease lasts the denser the fibrous tissue becomes, compressing and perhaps obliterating the vessels, and making the uterine tissue paler and harder. At the beginning of the process, according to Klob, the muscular fibres are hypertrophied, but later they are lost in the hypertrophy of the connective tissue. The uterus, when so enlarged, has all its diameters increased, but especially the antero-posterior measurement of the uterine body. The cervix is thickened. The uterine cavity is longer

* "Handbuch der pathologische Anatomie," p. 879.

† "Path. Anatomy of the Female Sexual Organs." Trans. by Kammerer and Dawson (1868), p. 127.

and broader, but its anterior and posterior walls are still almost in contact. Klob holds that the pathological change is not a result of inflammation, but a growth of connective tissue. Klob does not say how far his conclusions are based on the writings of others, and how far on specimens examined by himself, nor how many specimens he has examined, nor from what women they were obtained. Without some knowledge of the age, the time intervening since the last pregnancy, the cause of death, and the associated morbid conditions in the pelvis, it is impossible to form an opinion as to how far the changes described by Klob are those occurring in healthy women as they grow older, and how far they are morbid.

2. **The causes of subinvolution.***—For perfect involution of the uterus to take place, the patient during the lying-in period should be healthy, and the uterus contracted. The contractions of the uterus help the circulation both of blood and lymph through the organ by intermittently compressing the vessels. When the uterine contractions are imperfect, the less perfect circulation causes involution to be slow and incomplete. Therefore, after *post-partum hæmorrhage*, which implies imperfect uterine contraction, subinvolution is apt to be present. Uterine contraction is especially imperfect when there is *retention of a bit of placenta or membrane*. The presence of what (in the lying-in period) is a foreign body in the uterus not only interferes with uterine contractility, but mechanically prevents the shrinking of the uterus. When there is *fever*, all the bodily functions are badly performed; the natural metabolism is altered. The uterus suffers, like other tissues, and its involution is retarded. This effect is especially marked when the cause of fever is *inflammation in the pelvis*; for then the uterus not only suffers in common with the rest of the body, but the local inflammatory disturbance affects the circulation through the uterus. Hence the most marked cases of subinvolution are those associated with pelvic inflammation. When women have had *many*

* For an analysis of what has been done on this subject, and original observations, *see* Sir J. Williams, *Brit. Med. Journal*, 1882, vol. ii. *See* also an elaborate paper, with much histological detail, by Ries, "Zeit für Geb. und Gyn." Bd. xxiv.

children, involution does not go on so fast, or take place so perfectly, as after their earlier labours.

Certain other causes have been stated to cause subinvolution, and therefore require mention. (*a*) "General debility." This is so vague a term that it may include almost anything: its effect can therefore neither be proved nor disproved. (*b*) Parturition late in life. The effect of multiparity has been mentioned, and women who have had many children are generally elderly; but, apart from multiparity, there is no evidence that the completeness of involution at all depends upon the patient's age. (*c*) Premature delivery. No evidence exists that subinvolution is commoner after premature labours free from complication than after labour at term. But premature labour is often induced for or by conditions, such as placenta prævia or constitutional disease, which lead to imperfect contraction of the uterus or to fever; and for this reason subinvolution is commoner after premature deliveries; not because delivery was premature. (*d*) Laceration of the perineum. When there is a large wound of the genital passage the patient is more likely to become febrile than when the mucous membrane is intact, and for this reason subinvolution is more frequent when the perineum is badly torn than when it is not torn; but this is because there is fever, not because the perineum is torn. (*e*) Lactation. Some have stated that nursing favours involution; others, that it hinders it. No facts have been brought forward in support of either assertion. We know not what is the effect of lactation on involution. (*f*) Lacerations of the cervix uteri. These have no influence on involution. They are so high up that, in a well-managed lying-in, pathogenic microbes do not get access to them, and hence they are not influential in causing fever. (*g*) Plural pregnancy. As the uterus is here bigger than usual, involution may be slower; but I know of no proof that it is so. (*h*) *Other alleged causes.* Phthisis, diabetes, Bright's disease, syphilis, chronic suppuration, pneumonia, bronchitis, emphysema, heart disease, rheumatism, mental disturbance, chorea, eclampsia, bad sanitation, retroversion of the uterus, have all been said to hinder involution. But I have not found a particle of evidence adduced to prove the effect of any one of them.

They may or may not cause subinvolution; we do not know.

3. **Effects of subinvolution.**—Subinvolution in itself produces no disturbance of health. The uterus is often found large, but otherwise normal, in women who have had many children and are quite well, but in whom examination has been called for because some disease was suspected.

But a tissue that is in any way degenerate is more vulnerable by adverse influences than one which is healthy. Emphysematous lungs are more liable to bronchitis than healthy ones. A woman who has often suffered from the œdema common in pregnancy is more likely to get her feet swelled from fatigue than one whose feet have never been œdematous. A uterus not well involuted is more liable to disturbances of the circulation in it, and morbid changes resulting therefrom, than a healthy uterus.

Subinvolution of the vagina.—During pregnancy the vagina develops as well as the uterus. Its vessels increase in number and size; it becomes larger, and its walls thicker and softer. These are changes fitting it for dilatation during childbirth. After delivery it undergoes involution; it becomes less vascular, its capacity less, its mucous membrane firmer and thinner. The minute anatomy of these changes has not yet, so far as I know, been studied. In women who have had many children the involution of the vagina is often incomplete; the canal remains larger, its mucous membrane thicker, with larger rugæ. This subinvolution renders it more liable to catarrh. Hence women who have had children, and especially those in whom the vagina is large and relaxed, are more subject to leucorrhœa than virgins.

Treatment of subinvolution.—(A) *Preventive.* During childbed subinvolution is to be prevented (1) by taking care that no part of the placenta or the membranes is left behind in the uterus. (2) By the daily administration of ergot for three or four weeks after delivery. This drug has no effect upon normal involution, and therefore if everything is normal the drug is unnecessary. But when any condition is present that prevents proper contraction of the uterus, ergot will

hasten involution by making the uterus contract.* (3) By not allowing the patient to resume activity too soon. (4) I think, though I cannot adduce evidence in support of my opinion, that the use of astringent antiseptic vaginal douches during the lying-in period promotes involution of the vagina. (B) *Curative.* When the puerperal state is over and involution still incomplete, there is no treatment that will make the uterus get smaller. There is one event only which will alter the state of the uterus, and that is pregnancy. If the patient become pregnant, the uterus may in the succeeding puerperium, if no contrary cause again hinder involution return to its natural size, or even become smaller.

4. **What is Chronic metritis?**—Chronic metritis is a clinical term, meaning a uterus which is enlarged, painful, and tender. There may be other changes in such a uterus, but there are none constant enough to characterise the disease. There is no good evidence of inflammation, and the name *metritis* is only justifiable if we assume that the increase of fibrous tissue is produced by the organisation of inflammatory lymph. This has not been shown to be the case. For this reason Gaillard Thomas, following the German pathologists, rejected the term *metritis*, and called the disease *chronic areolar hyperplasia*. This implies that the hyperplasia is the cause of the symptoms. Hyperplasia of connective tissue is present in subinvolution, and therefore some teachers have used the term "subinvolution" and "chronic metritis" as if they were synonymous. But subinvolution causes no symptoms, and is so common in slight degree that it is described as a normal condition in text-books of anatomy.

Nevertheless, the increase of connective tissue must impair the contractile power of the uterus, by which the circulation of blood and lymph through it is helped on, and therefore such a uterus is more liable than a healthy one to

* In a paper by Dr. C. Owen Fowler and the author ("Obst. Trans.," vol. xxx.) evidence is published that, in a series of cases in which ergot was given, involution was less often delayed than in a series in which ergot was not given The late Dr. Blanc, of Lyons, about the same time published a paper (see *Lancet*, 1892, vol. ii. p. 1160), in which he compared two sets of cases, one with and one without ergot, and found that there was no difference in the rate of involution. But Dr. Blanc excluded all abnormal cases from his observations: his results are therefore in harmony with the view stated in the text.

morbid changes resulting from disturbance of the circulation through it. And treatment on the same lines as that used for chronic inflammation produces benefit. Therefore, although no anatomical proof of inflammation has been produced, the term "chronic metritis" fits the clinical history.

Chronic metritis has been described as occurring (*a*) with fibroids, (*b*) with "fungous endometritis" (that is, adenomatous growth), and (*c*) with displacements. But the change in the uterine tissues in these diseases, if anatomically similar, is clinically different. (*a*) With fibroids there is not the persistent pain of chronic metritis. In (*b*) "fungous endometritis" pain is trifling, although the patient is weakened by bleeding. (*c*) The swelling and tenderness of the uterus which are present in some cases of backward displacement quickly go away when the uterus is kept anteverted.

Hypothetical causes.—According to Thomas,* chronic metritis is sometimes due to excessive sexual intercourse, and also to "blood stasis and œdema" produced by cardiac disease and abdominal tumours. I know of no evidence in support of either of these statements. Chronic metritis has been said to be due to chronic endometritis.* I think the relation is the other way—that chronic metritis causes chronic endometritis. Over-treatment of endometritis;* if this be a cause, I hope it is a rare one. Dysmenorrhœa;* this produces hypertrophy of the uterine body, but not chronic metritis. Cold,* the favourite *asylum ignorantiæ*. I can only understand the production of chronic metritis by cold indirectly, the cold checking menstruation, producing pelvic congestion and perhaps inflammation, and, this being left untreated, passing into chronic metritis. Too early sexual intercourse after delivery or abortion;* the use of cold douches after intercourse.† I know of no evidence that these things produce the effect alleged; but the subject is difficult to investigate.

Pathology of chronic metritis.—This is hypothetical, because we only know the disease clinically. The chief morbid change is hyperæsthesia of the uterine nerves. The uterus aches, as an œdematous leg aches, or as a testicle,

* "Diseases of Women," 5th edition, p. 318.

† Potter, *Clinical Journal*, Aug. 15, 1894.

the veins of which are varicose, aches. A uterus which is imperfectly involuted receives more blood than it should; its contractile power is deficient, and the circulation through it is not helped on as it ought to be. This is shown to be the cause of the pain by the temporary relief which almost always follows local depletion. There is transudation through the vessel walls, which becomes organised into fibrous tissue. Hence imperfect nutrition of the nerve-endings, and compression of them by the exudation.

Symptoms of chronic metritis.—The great symptom is persistent pelvic pain. This is referred to the lower abdomen and back. It is a persistent aching, not a severe pain. It is lessened by lying down, but not removed. It is worse during the week preceding menstruation; better during the week which follows it. The flow is generally profuse, because, the uterus being enlarged, there is a larger surface to bleed; but sometimes it is scanty. There is generally leucorrhœa from accompanying vaginal catarrh; often also from cervical endometritis. There are often bladder irritation and smarting in micturition; these symptoms vary much from time to time in the same patient. The disease is often associated with hæmorrhoids, painful defæcation, and fissure of the anus, for its causes favour these conditions. Often the ovaries are tender; and often there are sympathetic pains in the breasts. The symptoms are aggravated by locomotion and exertion of any kind. There is almost always dyspareunia.

This disease is almost always associated with neurasthenia. It is the weak nervous system that makes the patient complain so much of the aching uterus. I have met with it in strong women, who were anxious lest the cause of pain should be some dangerous disease, but who, when their fears were removed, were content to regard the pelvic pain as a trifle.

Diagnosis of chronic metritis.—The diagnostic marks of chronic metritis are the size, the tenderness, and the constant aching of the uterus.

The size and tenderness of the uterus are ascertained by bimanual examination. To find out whether the uterus is tender, compress the uterine body between the external hand and the vaginal finger or fingers, and note if such compression

causes pain. Be careful to distinguish pain caused by compression of the uterus from that due to (*a*) deep pressure on the abdominal walls; (*b*) movement of it; (*c*) slipping of the fingers from the uterus on to the appendages. (*a*) To compress the uterus you must press deeply, and your pressure may produce wincing due to its firmness, not to the fact that the uterus is the part pressed on. If you press hard enough on any part of a sensitive patient you will make her complain. Avoid this error by pressing down with the hand on the abdomen both when the vaginal finger is pressing up the uterine body, and when it is not doing so. If the pain be really from compression of the uterus, you will not get it when you do not apply vaginal counter-pressure, though with the abdominal hand you press just as deeply. (*b*) Pressure on the uterus moves it, and if the ovaries or the peritoneum be tender, movement of the uterus will move them and cause pain. (*c*) Strong compression of the uterus is apt to make the uterus slip away from between the hands, which then come upon the appendages; and, if these are tender, pain will be caused. Therefore, compress the uterus gently and carefully, and avoid moving it. Note also the effect of moving the uterus without compressing it, and the effect of pressure over the uterine appendages. Observe whether these manipulations produce less or more pain than compression of the uterus.

Pelvic peritonitis and inflammation of the uterine appendages are excluded by the facts that on bimanual examination you find that the uterus is movable, and there is no lump or increased resistance behind or on either side of the uterus.

Uterine enlargement from subinvolution is distinguished from that due to fibroid tumours by the fact that the uterus, though large, is normal in shape; there are no bosses or nodules, nor is there disproportionate thickening of the uterus in any one diameter (Fig. 17).

If the patient be irregular in menstruation, and has gone over her time without seeing anything, it may be difficult, and, from one examination, impossible, to say whether she is pregnant or not. If the patient thinks she has gone two months, it is easy to form a judgment which will probably be correct. In pregnancy which has reached this

date the body of the uterus is enlarged from before backwards to an extent not found in subinvolution. If the pregnancy has not reached two months, diagnosis is impossible; therefore postpone an opinion, and ask leave to examine again in a month's time.

In the foregoing paragraphs the difficulties explained are

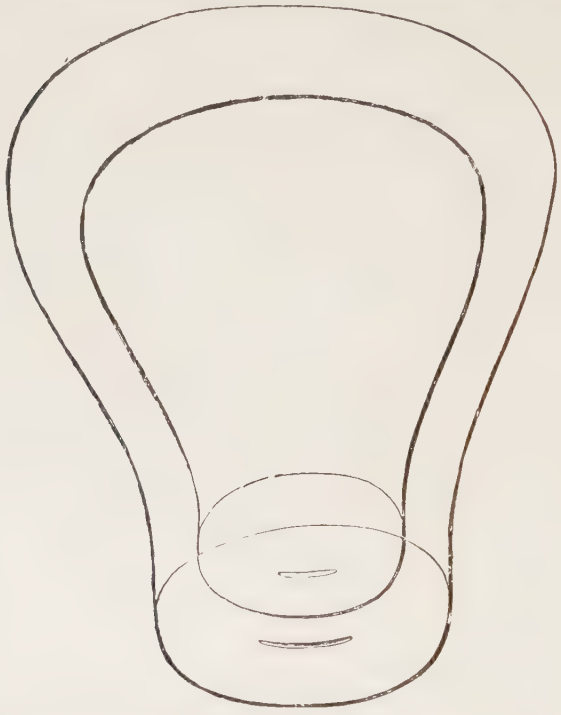

Fig. 17.—Diagram showing the difference between the normal uterus (inner outline) and one enlarged (outer outline) from subinvolution. (*After Simpson.*)

those of distinguishing between an enlarged and tender uterus and other pelvic conditions. But this is not the chief difficulty in practice. To diagnose an enlarged uterus is easy; to judge rightly of its importance is not.

The question in practice.—Some writers have said that chronic metritis is the commonest of female diseases. I think that it is comparatively rare, and that its frequency has been over-estimated, for two reasons.

(1) Persons unaccustomed to make bimanual examinations

often do not notice slight physical signs indicating chronic inflammation of the pelvic peritoneum and uterine appendages, and they consequently attribute to chronic metritis pain really due to perimetritis, a disease which in the puerperal state causes subinvolution. Gooch described chronic metritis as a common disease, under the name of "the irritable uterus"; and passages in his essay show that he fell into this mistake.

(2) In women suffering from neurasthenia the uterus often aches, and is tender; and some think that the symptoms of nervous exhaustion are reflex results of the uterine disease. But in many such cases the uterus aches because the nervous system is sensitive, not because there is uterine disease. If the neurasthenia can be cured or improved, the uterus ceases to ache.

I have seen, however, a few cases in which, if the clinical history was correct, the nervous symptoms had followed the local disease; in which there was no evidence of perimetritis; in which general treatment combined with local gave relief, which general treatment alone did not do; in which complete cessation of symptoms followed the menopause; and in which I therefore think that the uterine condition was a chief factor in the morbid state.

Prognosis.—This chiefly depends upon the duration of the symptoms. If the patient has only been ill a few months, you can probably cure her. If the ailment has extended over years it will probably last till the climacteric. When menstruation has ceased, and senile atrophy of the uterus has taken place, chronic metritis is cured. In West's picturesque, but, I think, somewhat exaggerated language, "When fifty years have been attained, the sickly, ailing, nervous invalid passes, to the surprise of all her friends, into the robust woman who complains of neither ache nor pain, who is equal to all exertion, for she has laid aside her sex's weakness with her sex's function."*

Treatment.—The best cure (short of the menopause) is *pregnancy*, followed by a healthy lying-in. Unfortunately the disease usually makes these patients sterile. But if pregnancy occur morbid changes will be undone during

* "Diseases of Women," edited by Duncan, p. 113.

the development of the uterus. After delivery, take care to prevent retention of secundines; to protect the patient from septic poisoning; and to keep the uterus well contracted by the administration of the liquid extract of ergot (half a drachm three times a day) during the month after delivery. If this be done, uterine involution will probably go on well, and complete cure will follow.

If the case is recent and the menstrual flow is excessive, a three months' course of ergot will do good. It will make the uterus contract, and thereby help the circulation through it and check the menstrual loss. But when the illness has lasted for years, no striking benefit follows.

If menstruation is scanty and painful, and the patient is not anæmic, local depletion will do good. Effect this either by blood-letting or by the local use of glycerine. Use blood-letting either by puncturing the cervix uteri with a pointed knife or by putting leeches to it, when the pain which precedes the flow comes on. Blood-letting in such cases relieves pain and makes menstruation more copious.

Glycerine is applied by inserting into the vagina either plugs of cotton wool, tied round with string for easy removal, and soaked in glycerine, or pessaries made of glycerine mixed with enough gelatine to make a solid mass. The glycerine causes a transudation of watery fluid,* and thus unloads the tissues and gives much relief. Tell the patient to apply a pessary or plug night and morning, and to lie down for an hour after inserting one. These applications do no harm; the only drawback is the trouble to the patient of applying them. Therefore let her use them as long as she finds benefit from them.

Contra-indications.—If the patient be losing copiously each month, it is like carrying coals to Newcastle to take blood from the womb; if she be anæmic, the abstraction of blood will make her worse; if she has profuse leucorrhœa, the discharge will saturate the affinity of glycerine for water, so that glycerine plugs or pessaries will do no good.

Counter-irritation.—In this disease abdominal counter-irritation does not produce a marked effect; but if it be not so violent as to make the patient sore, it will do no

* For proof *see* a paper by the author, "Obst. Trans.," vol. xxx.

harm, and it will make the patient hopeful. Have the lower belly painted with lin. iodi, or tr. iodi, or a mixture of the two, according to the sensitiveness of the skin; and let this be repeated as often as the state of the skin permits. Or prescribe Martindale's lin. capsici co.; this will redden the skin, but its effect is so transitory that the patient can use it every day.

There are more useful remedies applied by the vagina which act, I think, partly as counter-irritants. Tell the patient to douche the vagina night and morning with water at a temperature of 110–115° F., using a gallon or more each time. It is best used with a douche-tin, suspended three feet or so above the level of the patient's pelvis, so that the fluid flows by gravity in a continuous stream. The patient should lie on a bed bath. If she has not one of these, tell her to put a macintosh over the side of the bed, folding it so that in its centre there shall be a gutter-like depression guiding the fluid into a vessel beneath. Let the patient lie on this, with her body horizontal, her hips projecting beyond the edge of the bed, her feet resting on two chairs. If the patient uses the douche while standing or sitting, the fluid may not bathe every part of the mucous membrane. If the patient suffers from pruritus, tell her to put in the water as much borax as it will dissolve. If the discharge is offensive, tell her to add half an ounce of Condy's fluid, or of sanitas fluid, to each pint of water.

Such a douche is harmless; it keeps the parts clean; it makes the uterus contract, thus helping on the circulation through it; it at first dilates and then produces a reflex contraction of the vessels of the mucous membrane with which it comes in contact; its use is followed by much relief to pain. These effects certainly follow. It is said that it produces absorption of lymph, but I know not how this is ascertained. Scanzoni praised hot compresses to the abdomen; these are but a mild form of counter-irritation.

Iodine in the vagina acts as a counter-irritant to the cervical and vaginal mucous membrane. It may be painted on the cervix, or (which is less disagreeable to the patient), a plug of iodised wool soaked in glycerine or not, according to the case, and tied round with a piece of string for easy

removal, may be pushed up to the cervix night and morning, and removed before the douche is used. Some think that iodine used in this way favours the absorption of lymph. It may be so.

Internal remedies.—There is no drug that has any specific effect upon subinvolution or chronic metritis. Mr. Lawson Tait, following Sir James Simpson, said that chlorate of potash, which in ordinary doses is harmless, made the uterus diminish in size. I have seen benefit from it; but I have used it along with aletris cordial in 5j doses. Some think that a two or three months' course of mercury or iodide of potassium is beneficial. In a syphilitic patient no doubt improved health would result, and the occasional occurrence of a case of this kind would influence the judgment of the physician prescribing the remedy. If your patient is costive, give gentle laxatives, which will deplete the portal system. Ichthyol has been much used, both internally and as an ingredient of pessaries. It has a strong smell and dark colour. Iodide of lead has been used in pessaries. It has a bright yellow colour. I have not perceived any effect from either of these drugs: but the physical qualities I have mentioned help to persuade the patient that something is being done.

Forbid alcohol. So far as it has any effect on the pelvic organs, this effect is to aggravate pelvic congestion. But in patients with weak digestion, a little wine with meals may do more good by helping digestion than it does harm by increasing pelvic congestion. But only prescribe it if there is a clear indication for it, and prescribe the exact quantity that the patient is to take.

Chronic metritris with many symptoms is always associated with neurasthenia. To a robust woman chronic metritis is a trivial malady, which she would rather be without, but which does not debar her from any social duty or pleasure. Such women will submit to treatment which they are told will remove the aching, but they will not, if rightly informed as to the nature of their disease, submit to treatment which is dangerous, or irksome, or protracted over months or years. If there is neurasthenia, the most important part of the treatment is to cure this: by rest, food, and change.

Health resorts.—Residence at certain spas is said to be beneficial in this disease, especially Woodhall Spa in England and Kreuznach in Germany. But I know of no evidence to show—(1) that the waters have any part in the improvement, or (2) that any change is effected in the uterus. (1) The benefit comes, not from the water that is swallowed or applied to the skin or mucous membranes, but from the rest and change and the regular healthy way of living which all the influences of such places gently enforce upon those who visit them. (2) The benefit is, that the nervous system is invigorated, and so the aching in the uterus is less felt: but no change is produced in the organ itself. A stay at one of these places is a pleasant change to be suggested to patients who have leisure and money—not a unique remedy to be authoritatively urged, regardless of the patient's circumstances.

Other modes of treatment. — Lately what is called "uterine massage"—that is, pressing the uterus up with one or two fingers in the vagina, and rubbing it for ten or twenty minutes with the hand on the abdomen, has been recommended by a Swedish teacher of gymnastics called Thure-Brandt, and practised according to his directions by specialists on the Continent. I know of no evidence that it is beneficial. If it were, I should think the treatment one to be applied by nurses, not by doctors.

The facts that chronic metritis is attended with increased menstrual pain, and that the symptoms subside after the menopause, would suggest, as a rational measure, removal of the ovaries. I have no personal experience of this. I have heard of cases in which it has been done without benefit. That is what I should expect, for in this disease none but neurasthenic women suffer enough to make such an operation dreamed of, and removal of the ovaries does not cure neurasthenia.

Complications of chronic metritis.—Allusion has already been made to the fact that because pelvic inflammation produces subinvolution, there are in many cases in which the uterus is large, aches, and is tender, pelvic adhesions which add to the pain, if they are not wholly responsible for it. It has also been pointed out that when involution is imperfect,

the uterus is more liable to chronic degenerative changes and inflammation. Hence adenomatous growths, with endometritis, are often present with chronic metritis. If these conditions are present, their symptoms are added to those which chronic metritis causes. They are described in subsequent chapters. There is generally leucorrhœa with chronic metritis from subinvolution of the vagina. This requires treatment which will be described later.

In former times thickening of the cervix uteri was supposed to be a source of much trouble. A favourite mode of treatment was to destroy part of the thickened cervix with potassa fusa or some other caustic. Later, this was supplanted by operations to repair tears in the cervix, or to cut off pieces of a thickened cervix. The indications for surgical interference with morbid conditions of the cervix I shall describe afterwards. Here I have only to say that I know of no evidence that cutting off part of the cervix, or destroying it with caustic, or sewing up slits in it, has any effect upon pain or tenderness of the uterine body.

CHAPTER X.

UTERINE DISPLACEMENTS.

I.—PROLAPSE.

The term "uterine displacements" has been used to denote one major, *inversion*, and several minor.

Inversion.—The major displacement is inversion. It is produced either immediately after the delivery of a child, or during the delivery of a fibroid. It threatens life by hæmorrhage. It will be described among the causes of that symptom.

So-called minor displacements.—The minor so-called displacements are anteflexion, anteversion, lateriversion, retroflexion, retroversion, and prolapse. The first three of these are not morbid conditions.

Lateriversion is either normal (for the uterus, like the vomer, is seldom exactly in the middle) or results from the uterus being pulled aside by adhesions, or pushed aside by a swelling. The condition which produces lateriversion may be important, but the unusual place of the uterus is not.

Anteflexion is the natural shape of the uterus in most virgins. The uterus is straight in only about one-fourth of such patients. This normal curve is often straightened out by child-bearing, but not by anything else. It produces no symptoms.*

Anteversion is the usual position of the uterus when the bladder is empty.

Prolapse.—Prolapse causes pain, but does not endanger life. It is important because it is so common. In most cases the position of the uterus is an unimportant effect of the condition which causes the pain; but it is the most palpable physical sign, and therefore the one from which the disease has been named. In retroversion and retroflexion, which are generally effects of prolapse, the displacement is important

* For evidence see papers by the author, "Obst. Trans." vol. xxiii., and *Lancet*, vol. ii., 1884; and by Vedeler, "Arch. für Gyn." Band xxi.

because it may bring about changes in the circulation through the uterus.

The pathology of prolapse.—The essential condition in prolapse is yielding and stretching of the pelvic floor. The uterus rests on the pelvic floor, and sinks when this yields

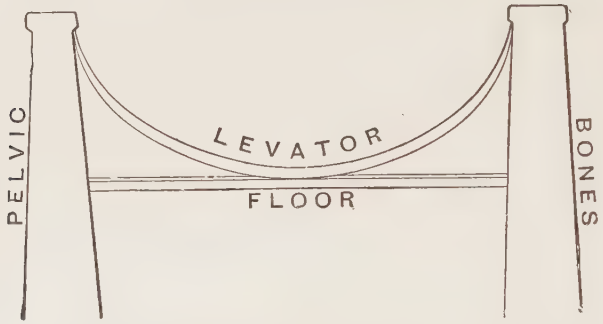

Fig. 18.—Diagram illustrating structure of pelvic floor. (*After Skene.*)

(Fig. 18); a change easily recognised. The muscles and fasciæ, when overstretched, ache; hence the pain.

The causes of the yielding are four—weakness, injury, overstretching, congenital defect.

1. **Weakness**: that is, lowered muscular and nervous tone. Graily Hewitt attributed this to malnutrition from deficient food, and unhealthy modes of life. Overstrain from long hours of work, from frequently repeated child-bearing, from too prolonged lactation, or from anxiety or unhappiness, is as important. This alone, however, only causes slight descent. Hence the slighter forms of prolapse often go with neurasthenia.

2. **Injury in childbirth.**—This injury may be either overstretching during the passage of the child, or tearing of the parts. The fact that prolapse is commoner in women who have had children than in virgins shows that this condition is favoured by child-bearing. It is certain that it is not due to lacerations of the vaginal mucous membrane or of the perineum; for complete rupture of the perineum may exist unrepaired for years without prolapse. It is therefore a reasonable inference that the way in which child-bearing favours prolapse is by causing injury to those structures

in the pelvic floor which are the main supports of the uterus, viz., the pelvic fascia and the levator ani muscle (Figs. 19, 20). But our knowledge of these injuries has not advanced beyond theory. I know of no dissection that has been made to show the existence or the precise extent of such tears.

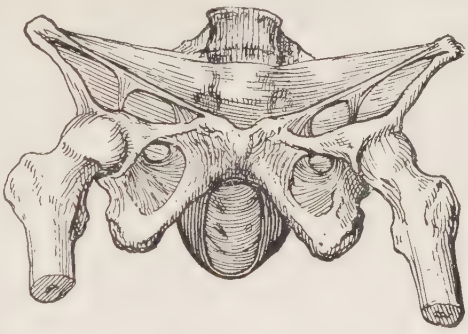

Fig. 19.—Levator ani. (*After Buckmaster.*)

Schatz* has described subcutaneous or rather submucous laceration of the muscles forming the pelvic floor (chiefly the levator ani) occurring during labour. He ascertained these by feeling through the vagina gaps between the muscular bundles. He assumed that these gaps were produced by the tearing through of other bundles which ought to have filled these spaces; but he has not verified the theory

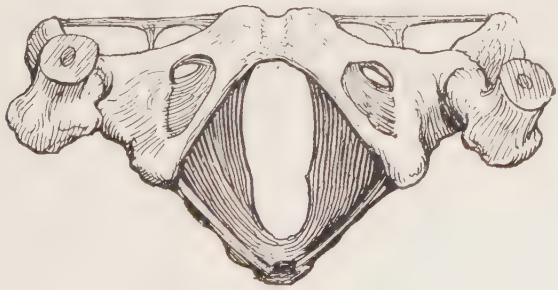

Fig. 20.—Levator ani. (*After Buckmaster.*)

by dissection. I have felt gaps such as Schatz describes between the muscular bundles, but I have failed to trace in patients in whom I felt such gaps a subsequent tendency to prolapse. Skene† has also described subcutaneous or submucous laceration of the pelvic floor during delivery,

* "Arch. für Gyn." Bd. xxii., 1884. S. 293.

† *New York Med. Journal*, March 14th, 1885.

presumably independently for he does not refer to Schatz's paper which was published about a year previously. Stone describes not only paresis but very degenerative atrophy and paralysis of the iliococcygeus, but he does not say that he has verified either the paresis or the degeneration by dissection. He describes a change in the position of the anus as being a result of injury to the pelvic floor: but it does not appear from his paper that he has compared the state of the parts before child-bearing in any particular case with the state after: and without such a comparison it is not possible to be certain that what are described as changes due to injury in childbirth are changes at all. Kelly* has described "relaxation" as "the most important of all injuries" of the perineum and pelvic floor. His description of the injuries is based upon that of Schatz but contains nothing to indicate that he has verified them by dissection. He says that as a result of these injuries the anal cleft is no longer a deep deep furrow, but is flat and shallow and the anus is further back and more exposed. But without knowing what was the condition of the parts in the individual cases before childbirth it is not possible to be sure that the peculiarities mentioned are really the result of injury. The depth of the anal cleft depends principally on the fullness of the buttocks: and the distance of the anus from the coccyx and pubes respectively is different in different women.

For the reasons given I believe that the fascia and muscles of the pelvic floor are often injured in childbirth, and that such injury is the main cause of prolapse, notwithstanding that the fact has not yet been demonstrated by the exhibition of specimens.

3. **Sudden stretching**—During violent exertion, as in a fit, the uterus has been suddenly forced outside the vulva, even in a virgin. The repetition of such an event, or want of proper treatment at the time, may lead to the descent becoming permanent.

4. **Congenital anatomical peculiarities**—Just as the formation of hernia is favoured by anatomical peculiarities in the individual so the risk of prolapse. I have seen in nine-

* "American System of Gynæcology and Obstetrics"; art. "Injuries and Lacerations of the Perineum and Pelvic Floor."

wise healthy young virgins, who had never followed any laborious occupation, the vagina inverted and the whole uterus (together with, in one case, some coils of intestine) outside the vulva. Such a condition can only be explained by a congenital peculiarity.

Pathological relationships.—In their pathology the minor displacements resemble flat-foot, lateral curvature of the spine, and knock-knee. In all these diseases there is yielding of muscular and fibrous structures. The slighter forms depend on debility, and improve as the health improves. In the greater forms the changes are too great to be altered by merely improving the general health. In all, the suffering of the patient depends not upon the amount of local change, but on the state of her health.

The higher degrees of prolapse are like herniæ. In the one the uterus protrudes, in the other the bowel. In a child the hernial orifice may close if a truss is worn long enough. In the slighter forms of uterine descent, if the uterus is supported until the pelvic floor has regained its tone, the patient may be able then to discontinue treatment. But as a large hernia is attended with permanent change at the spot of protrusion, so the changes in the pelvic floor which go with great prolapse are permanent.

The points in which the parallel between uterine displacements and herniæ does not hold good are (1) the production of displacements by mere functional weakness, and (2) their association with nervous symptoms also produced by functional weakness.

Symptoms.—The symptoms directly produced by prolapse are the same in all its varieties. In great prolapse the patient tells you that her womb is down. In the slighter forms she often does not know what is the matter, and only complains of pain.

Prolapse causes aching, dragging, bearing down pain, felt in the lower part of abdomen and back and down the thighs, especially the left thigh. This pain is worse during menstruation. It is made worse by defiecation, because the straining forces the womb down. The bladder is pulled on and hence irritated, and therefore the patient has to pass urine with annoying frequency. The characteristic feature

of the pain is that it ceases when the patient lies down. If it does not do so, the patient's troubles are not entirely due to prolapse, although it may be part of her ailment.

The association of nervous symptoms with minor displacements.—The slighter degrees of prolapse are often associated with neurasthenia, loss of flesh, and atonic dyspepsia; loss of appetite, discomfort after food, flatulence, constipation. When the patient walks her pain is worse; hence she avoids walking, and may put it that she can't walk. Graily Hewitt called this *uterine dyskinesia.*

The symptoms of neurasthenia are so often associated with minor displacements of the uterus that they have been described as reflex symptoms produced by displacement. They occur with *minor* displacements for these reasons:—(*a*) muscular weakness is a cause of slight, not of great prolapse; (*b*) a patient with neurasthenia will feel pain from a degree of prolapse which would not trouble a strong woman; (*c*) prolapse usually begins between the ages of twenty-five and thirty-five, when women are having children quickly, and when they suffer most from the strain of pregnancy, labour, lactation, and the care of young children. By the time prolapse has become great the patient has generally ceased child-bearing, and her children are old enough to give little trouble; hence nervous exhaustion is less frequent in such patients.

The diagnosis of the slighter forms.—There are degrees of prolapse, and degrees of symptoms, from a case in which the patient only feels a slight bearing-down pain occasionally to one whose pelvic floor aches continually from when she gets up in the morning till she goes to bed at night.

Take the slightest form. A patient has only recently begun to suffer from occasional bearing-down pain, always relieved by lying down. If she has no other symptoms, you may infer the cause of the pain from its characters. It varies with the patient's health—worse if this is from any other cause depressed, better when this is good. Find out if you can anything in the patient's circumstances and mode of life that is unhealthy, and remove it if possible If she is suckling, let her wean the baby. If she sleeps badly, send her to bed early and see that her night's rest is undisturbed.

Give her tonic medicine, and, if possible, order change of air to a bracing place. Such treatment will remove the symptoms.

Physical examination.—If the symptoms are not occasional only, but constant, probably mechanical support will be needed. You cannot judge as to this without examining the patient.

Begin by examining the abdomen. Palpate it, and you will find the belly is non-resistent. With gradual firm pressure you can press down into the pelvic brim and into the loin, and make sure that there is no tumour or tenderness.

On vaginal examination the uterus is movable. You can push it up or to either side; and when you press up on either side of the uterus, behind it, or in front of it, there is no undue fulness or resistance; nor, unless you press very forcibly, is there tenderness. This excludes pelvic inflammation. The other signs will depend upon the form of prolapse.

Physiological descent.—A certain amount of descent is physiological. With respiration there is a slight ascent and descent of the pelvic floor, and during muscular effort a more considerable descent. The amount of this descent is different in different persons, and in the same person at different times. In prolapse this physiological yielding is increased.

The average increase, under strain, in the projection of the pelvic floor—that is, the measurement of the pelvic floor over the soft parts, from a point low down on the sacrum, or on the coccyx, to the symphysis pubis—is about an inch and a quarter. This takes place in two ways: (1) stretching in the antero-posterior direction; (2) movement backwards and downwards of the posterior segment of the pelvic floor (from coccyx to fourchette); a movement which implies stretching from side to side. The behaviour of the posterior segment of the pelvic floor is like what takes place in labour, but to a less extent, and with the difference that, instead of being pushed down by the fœtal head, it is pushed down by the anterior segment, which in labour is pulled up to make way for the child (Fig. 21).

The average amount of stretching in each direction is nearly equal, being about three-fifths of an inch. With this descent of the pelvic floor there goes descent of the uterus

and shortening of the vagina. This takes place partly by the upper part of the vagina becoming inverted into the part next below it, and partly by the vaginal rugæ being pressed together—*i.e.* by increased wrinkling and actual shortening of the mucous tract. In many women there occurs slight

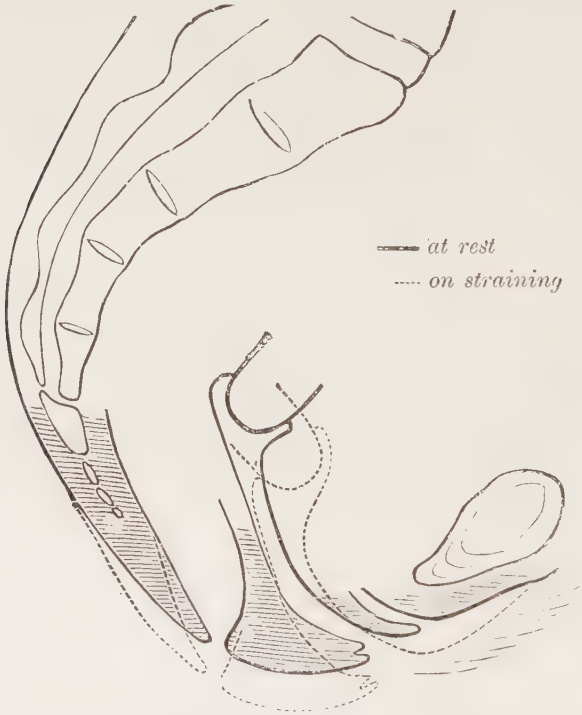

Fig. 21.—Diagram showing normal descent of pelvic floor, descent of uterus, and shortening of vagina during effort. (*Drawn from measurements of a nullipara, aged* 19, *suffering from a small ovarian tumour.*)

inversion of the lower part of the vagina, which thus protrudes slightly when the patient strains; but this is not usual in the nullipara.

The average descent during straining of the anterior vaginal cul-de-sac is about an inch, that of the posterior cul-de-sac rather less. In parous women the amount of inversion is greater. In nulliparæ the posterior cul-de-sac is more shortened during straining than the anterior; in the parous the anterior is more shortened than the posterior.

The uterus as it descends moves in the axis of the pelvis—that is, roughly speaking, in a curve having a centre in or near the symphysis pubis—and by a movement of this kind the posterior cul-de-sac is more shortened than the anterior.

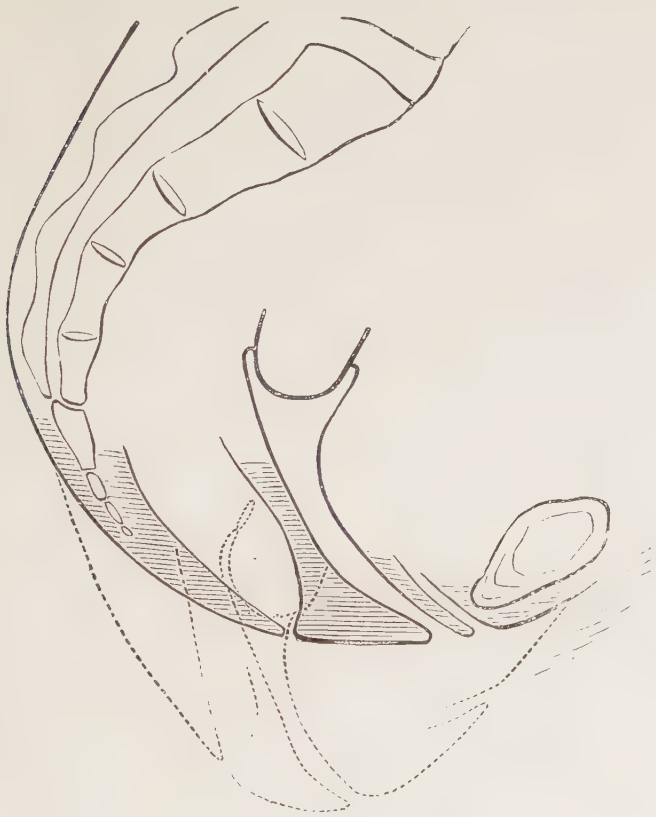

Fig. 22.—Diagram showing descent of the pelvic floor without relative displacement of uterus. (*Drawn from measurements.*)

This is what takes place in the nullipara. On the other hand, prolapse is more frequent among the parous, and in prolapse the anterior vaginal wall is the part which commonly comes down first.*

Prolapse of the pelvic floor without relative displace-

* For evidence of these statements *see* papers by the author, "Obst. Trans." vol. xxxi.

ment of the uterus.—The slightest form of prolapse consists simply in exaggeration of the descent of the uterus and pelvic floor, which takes place in every woman during effort. On digital examination you find the uterus normal in position, movable, and of natural size. Its body cannot be felt either through the anterior or posterior vaginal wall. The vagina is not relaxed, nor its orifice unduly large. On inspection, when the patient is lying on her side, you see the perineum forming the bottom of a groove between the convex eminences of the buttocks, ascending slightly during inspiration, and descending to an equal extent during expiration. If, now, the patient be told to bear down, the perineum bulges downwards, forming, instead of the bottom of a groove, a third convex swelling between the two lateral ones of the buttocks. The uterus during this effort descends with the pelvic floor, but neither uterus nor vagina undergoes any change other than the slight normal descent into the vagina. The morbid condition present is abnormal yielding of the pelvic floor, without relative alteration of its parts (Fig. 22). The amount of descent can be noticed just as well by the hand, but it is more striking when observed by the eye.

The perineum ought not to descend more than about half an inch when the patient strains. In some cases it bulges down to the extent of two inches or more. Such excessive descent as this is usually accompanied with painful sensations. Uncomplicated cases of this kind are more frequent within a few months after parturition, because such yielding of the pelvic floor tends to become in time complicated with prolapse of the vagina and uterus. It is met with, although not often, in nulliparæ. In them it is associated with relaxation of the general muscular tone, and the symptoms vary with the general health, being absent when this is better than usual.

The symptoms are aching, dragging sensations, felt in the back and lower abdomen and down the thighs. Like many other pains,* it is often worse on the left side, mainly because the left side is weaker in resisting painful impres-

* See Champneys, "On the Pain of Pelvic Cancer," "Obstet. Trans." vol. xxii. p. 10. See also a paper by the author, "On the Frequency of Local Symptoms in Displacement of the Uterus," "Obst. Trans." vol. xxxv.

sions, as well as weaker in motor power, than the right. The patient will sometimes say that her "womb is coming down," or that "something is coming down"; and if pressed to describe her pain, will say that it feels as if something were sinking from her. The pain is removed by lying down. Pains of many kinds are lessened or removed by recumbency, and therefore, if this is so, it does not follow that the pain is due to yielding of the pelvic floor. But if the pain be not removed by lying down, it cannot be entirely due to prolapse, and no mechanical treatment will be enough to cure it. It is made worse by walking and by defæcation, from the straining which accompanies that function. It is often associated with constipation. This implies scybala, which require straining to expel them, and such straining helps to weaken the pelvic floor. There is often irritability of the bladder. The conditions which make the pelvic floor prone to yield (child-bearing, debility, constipation) are those which also favour leucorrhœa, which is therefore often present. The symptoms are usually increased before and during menstruation, in consequence of the congestion of the pelvic organs which precedes this function, but menstruation otherwise is unaffected.

Treatment.—These symptoms can be relieved by support to the perineum. Vaginal pessaries are useless, because all that a vaginal pessary can do is to keep the vagina extended. In cases in which there is descent of the uterus, with inversion of the upper part of the vagina, vaginal pessaries, which keep the vagina extended, are serviceable; but in these cases there is no such condition. Support to the perineum is wanted. The readiest way of giving this support is by an ordinary napkin, very tightly fastened. The patient may find difficulty in keeping a napkin adjusted tightly enough. If so, advise an abdominal belt with a perineal pad (Fig. 23).

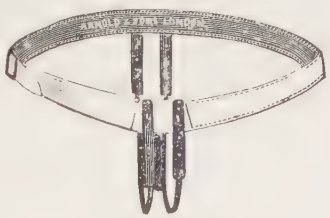

Fig. 23.—Perineal support.

These cases are important, because in them we have the phenomena of prolapse in their slightest and simplest

form; and they therefore teach us the symptoms which prolapse does and does not cause. The test, whether symptoms be due to alterations in the position of the pelvic organs, is that they should be relieved by correcting the anomaly which is assumed to be their cause. In these cases this can be done, and when it is done the symptoms are at once and completely relieved.

The mechanism of uterine prolapse.—If the condition goes further, either (1) the uterus sinks into the vagina, inverting the upper part of that canal; or (2) the anterior vaginal wall sinks down, and pulls the uterus after it. The rule is that the anterior vaginal wall comes down first; this drags down the cervix uteri, and the cervix drags down the posterior vaginal wall. Consider now the morbid change which begins the process.

Prolapse of the vagina.—You must not think that because a patient complains of her "womb" coming down, therefore there is *uterine* prolapse. In most cases the anterior vaginal wall first comes down, bringing the bladder with it. This is called *cystocele* (κύστις, the bladder; κήλη, a tumour), because it forms a swelling containing the bladder. In some few cases the posterior vaginal wall protrudes first and most, and is bulged forwards and downwards by the anterior wall of the rectum, which protrudes into it. This is called *rectocele* (Fig. 24). The usual order of events is first cystocele, then prolapse of the uterus, then rectocele. Rectocele, under any circumstances, is not so common as the other kinds of prolapse, and as the first and sole kind of prolapse it is rare. It is also rare to get more than a slight degree of prolapse without cystocele. There is a specimen in the London Hospital museum,* in which the uterus is dragged down

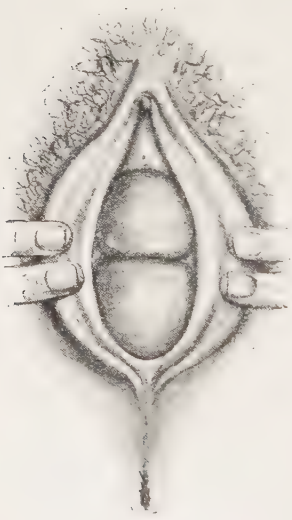

Fig. 24.—Cystocele and rectocele.

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without the bladder by a large pedunculated tumour attached to the cervix—an exceptional condition (Fig. 25).

The diagnosis of cystocele.—The patient describes a

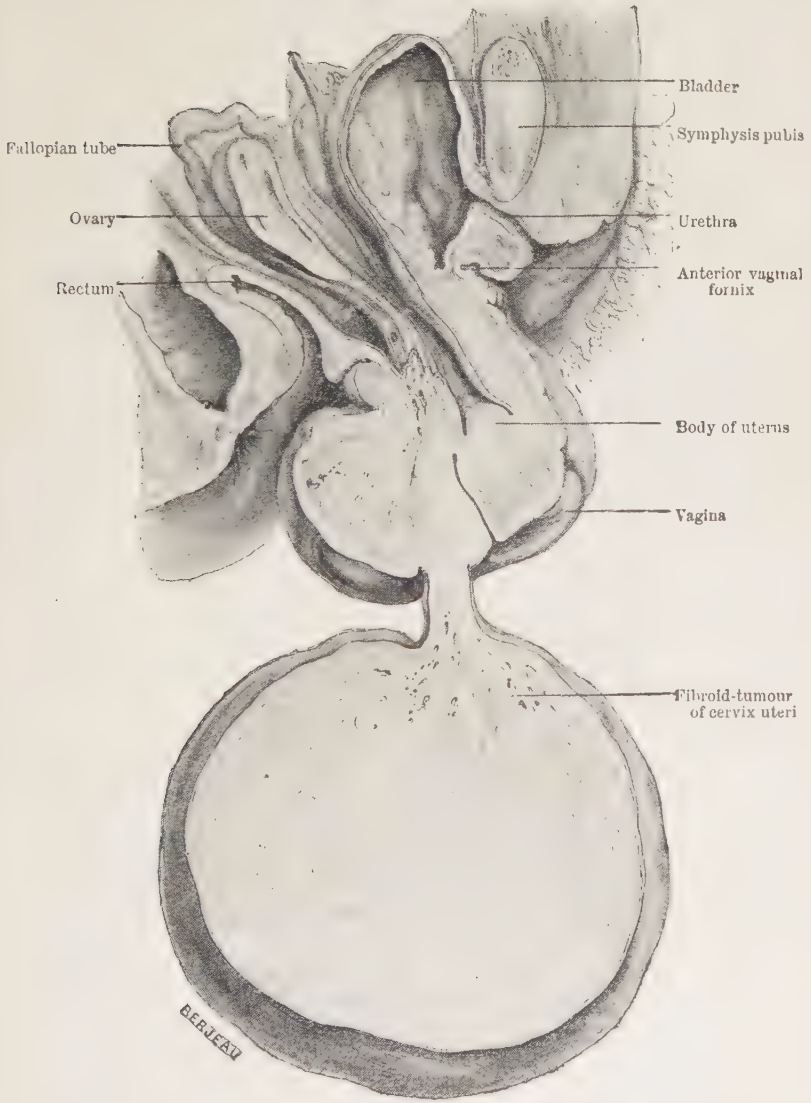


Fig. 25.—Uterus dragged down by a tumour. (*From a specimen in the London Hospital Museum.*)

lump coming down. It goes away when she lies down, and returns when she stands. Examine it, and you see a convex protrusion between the labia, covered with rugous vaginal mucous membrane, and easily pushed back. In front of it is the meatus urinarius, and carrying your finger backwards and upwards along the surface of the protrusion, you come to, within the vagina, the cervix uteri. Laterally, the surface of the swelling is continuous with the vagina. When you pass a sound into the urethra with the concavity backwards, you find it enters the swelling, and its point can be felt just under the mucous membrane of the protruded mass. This shows that the protrusion contains the bladder. The only thing with which a cystocele might be confused is a tumour in the anterior vaginal wall. In any such condition the sound in the urethra would not pass backwards into the tumour.

Treatment of cystocele.—In slight cystocele, Graily Hewitt's cradle pessary is the best instrument (Fig. 26). The prolapsed anterior vaginal wall forms a convexity downwards. The cradle lifts up the base of the bladder, crumpling upwards this convexity: removes the blunt wedge, which would otherwise stretch open the vaginal orifice, and thus prevents prolapse from increasing. The pessary rests on the posterior vaginal wall. Its posterior ring should surround the cervix. It is held in place by the embrace of the vaginal wall (Fig. 27). The objection to the cradle pessary is that it blocks up the vagina, and may prevent sexual intercourse. This objection can be obviated by teaching the patient to take out and replace the instrument herself. A patient cannot do this with a Hodge's pessary, because the upper end of this instrument tends to get in front of the cervix, and the patient cannot herself push it into the posterior fornix. It is possible for her to apply the cradle. I have known patients do it without instruction.

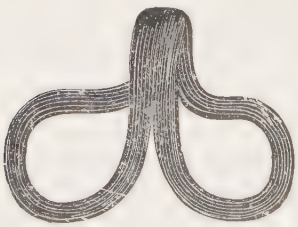


Fig. 26.—Hewitt's "cradle" pessary.

Prolapse of the uterus.—Prolapse of the uterus is divided into three degrees:—

The first, in which the cervix uteri comes down, but not beyond the vulva (Fig. 28).

The second, in which the cervix is outside the vulva, but the body of the uterus is within it (Fig. 29).

The third, in which the whole uterus is external.

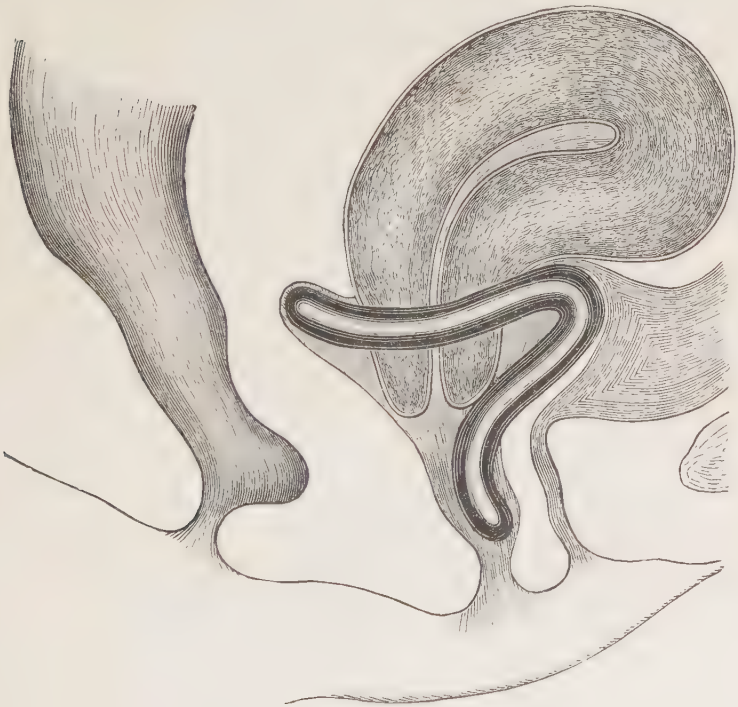


Fig. 27.—"Cradle" pessary in position. (*Graily Hewitt.*)

This division is not arbitrary. In the *first* degree the uterus is generally healthy, except that it comes lower than it ought to.

Elongation of cervix.—In the *second* stage four other morbid changes are brought about: (*a*) *Œdema.* The cervix is embraced by the vulval orifice; and the effect of this is to obstruct the return of blood from the part outside which becomes swollen (Fig. 30). The obstruction to the return of blood may be great. Baldry * has reported a case in which a

* "American Journal of Obstetrics," Feb., 1898, p. 230.

prolapse was complicated with a fibroid of the cervix. The protruded mass was blackish red in colour, like a strangulated hernia, and there was fever; all the symptoms disappearing

Fig. 28.—Descent of pelvic floor, with slight (first degree of) prolapse. (*From measurements.*)

when the mass was replaced. (*b*) *Change in the mucous membrane* Evaporation takes place from the exposed surfaces of vagina and cervix, which becomes dry and scaly, more like a patch of psoriasis than either healthy skin or healthy mucous membrane. (*c*) *Ulceration.* The exposed part is

subject to friction; and the result of this, together with the obstructed circulation, is ulceration; a depressed granular surface secreting pus and covered with granulation tissue instead of epithelium; not a new growth of gland tissue like a granular

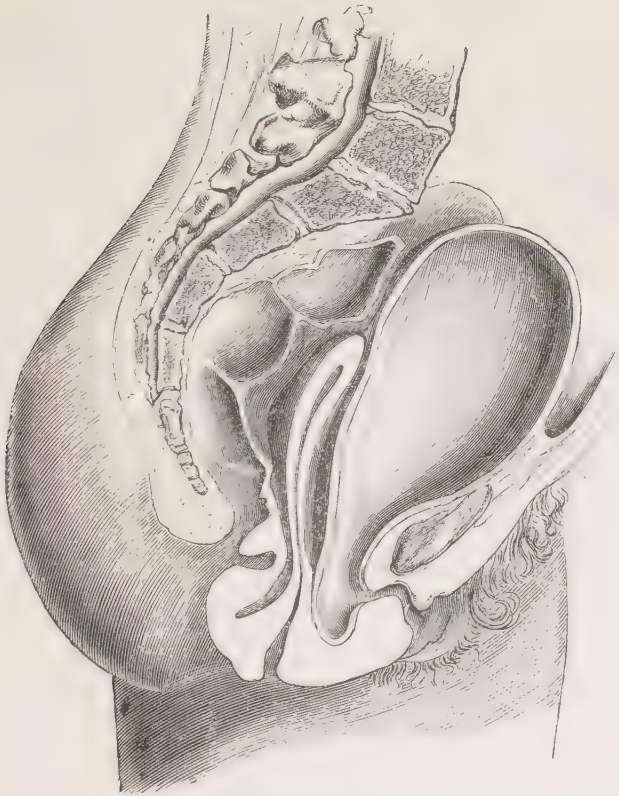


Fig. 29.—Showing second degree of prolapse; elongation of cervix and body of uterus; swelling of part outside vulva; cystocele (*R. Barnes*). (*From a specimen in the Museum of St. Thomas's Hospital.*)

erosion. Sometimes these ulcerations are covered with a diphtheritic-looking pellicle. Beyea* has recorded a case in which the prolapsed uterus was not only superficially ulcerated, but its wall was infiltrated with small abscesses, and this suppuration led to fatal peritonitis. *(d) Elongation.* There is yet another change to be noticed (Fig. 31). Most cases of

* "American Journal of Obstetrics," Feb., 1898, p. 231.

prolapse of the uterus begin with prolapse of the vagina. The body of the uterus being held in place by its own attachments, the traction on the cervix pulls it from the body, and lengthens

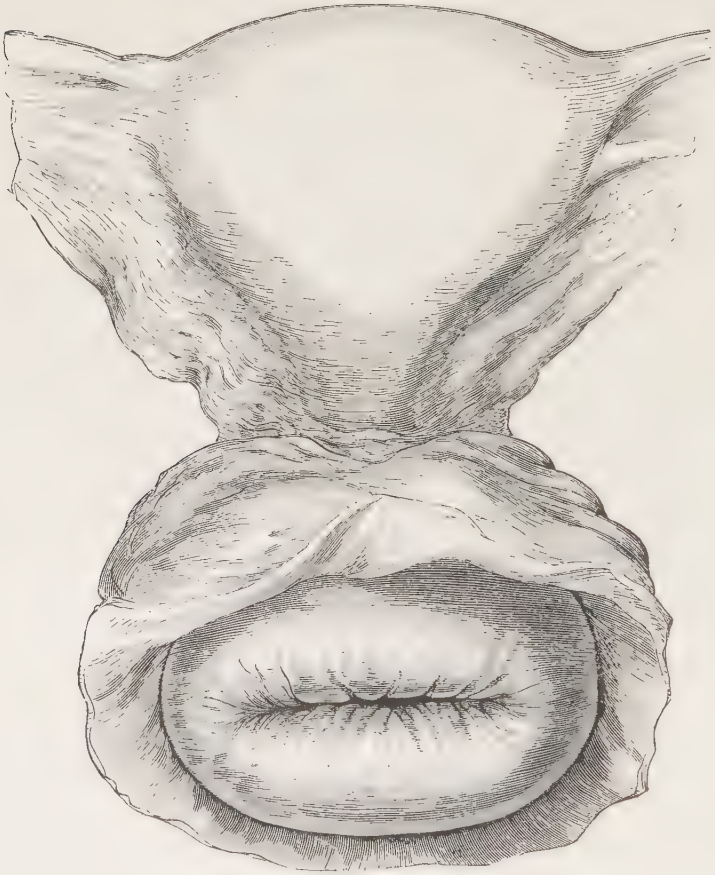


Fig. 30.—Second degree of prolapse, with elongation of cervix and great swelling of part outside vulva (*R. Barnes*). (*From a specimen in the Museum of King's College Hospital, No.* 9,902).

the part of the cervix which is above the insertion of the vagina. This may be so stretched that the uterine cavity comes to measure five inches long.

Pathology of hypertrophic elongation of the cervix.—The pathology of the lengthening of the uterine canal which

goes with the second stage of prolapse is not yet perfectly understood. Its common name, "hypertrophic elongation of the cervix," implies that there is new growth as well as

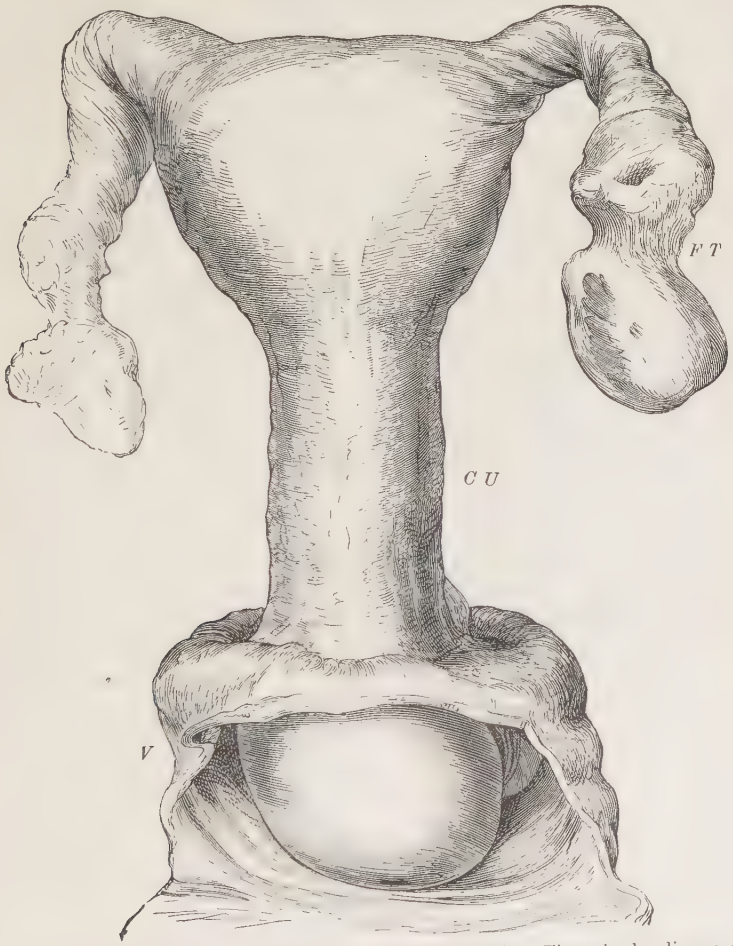


Fig. 31. –Showing great elongation of supra-vaginal cervix. There is also disease of the Fallopian tubes (*R. Barnes.*) (*From a specimen in the Museum of St. Bartholomew's Hospital, No.* 32—30).

C U, cervix uteri; F T, Fallopian tube; V, vagina.

stretching. The reasons for thinking it due to stretching are, first, that if you grasp the cervix at the part within the vulva you will find that it is thin; second, and chiefly, that

when prolapse is complete the uterus generally returns to its natural length. But the elongation is not always due solely to stretching. There is a specimen in the Museum of the Royal College of Surgeons, in which there is elongation of the intra-vaginal portion of the anterior cervical wall, and of the supra-vaginal portion of the posterior cervical wall; and no thinning at all (Fig. 32). Here the change is hypertrophy. I suspect it to have been congenital, and unusual in the low attachment of the vagina behind. The name also implies that the elongation is of the cervix. Cullingworth has pointed out that the elongation is not limited to the cervix; it affects the body of the uterus also.

Fig. 32—Elongation of infra-vaginal portion of anterior wall of cervix and of supra-vaginal portion of posterior wall. (*From a specimen in the Museum of the Royal College of Surgeons.*)

Complete procidentia.—In the *third* stage, in which the whole uterus is outside, the conditions are altered (Fig. 33). The inverted vagina forms a bag hanging from the vulva, at the bottom of which lies the uterus, usually retroverted; *i.e.* horizontal, the cervix in front, the body behind (Fig. 34). I have twice seen it anteverted, but much oftener retroverted. There is now no longer pulling of the cervix from the fundus, and therefore the cervix is not elongated; the uterus becomes again its normal length. The cervix is no longer constricted by being encircled by the vulva, and therefore the swelling of the cervix, which was the result of the constriction, disappears. The ulceration and the dry scaly condition of the vaginal and cervical mucous membrane are the same.

Diagnosis.—*Uterine prolapse of the first degree* is recognised by the descent of the cervix when the patient strains,

and the absence of enlargement of the uterus. Ascertain the size of the uterus by bimanual examination.

Uterine prolapse of the *second* degree, with elongation of the cervix, has to be distinguished from hypertrophy of the infra-vaginal portion of the cervix. This is a congenital

Fig. 33.—Third degree of prolapse; uterus completely outside vulva; vagina completely inverted (*R. Barnes*). (*From a specimen in St. George's Hospital Museum.*)

P, symphysis pubis; B, bladder; B', cystocele, that is, prolapsed part of bladder; U, urethra; O U, os uteri; D, Douglas's pouch outside vulva; O, ovary dragged down; A, anus.

malformation occasionally met with in virgins. It generally causes slight descent. Make the distinction by pushing back the protruded cervix as far as possible. In prolapse with elongation from the dragging of the vagina, the cervix can be pushed quite back and up until not more than half an inch of its length protrudes into the vagina. In hypertrophy of the infra-vaginal cervix, however high the cervix is pushed up,

the columnar vaginal portion remains jutting downwards into the vagina for a length of one to two inches or more (Fig. 35).

Uterine prolapse of the *third* degree can scarcely be taken for anything else. There is a bag hanging from the vulva covered with dry scaly mucous membrane. The finger passed round the neck of this tumour finds that its covering is

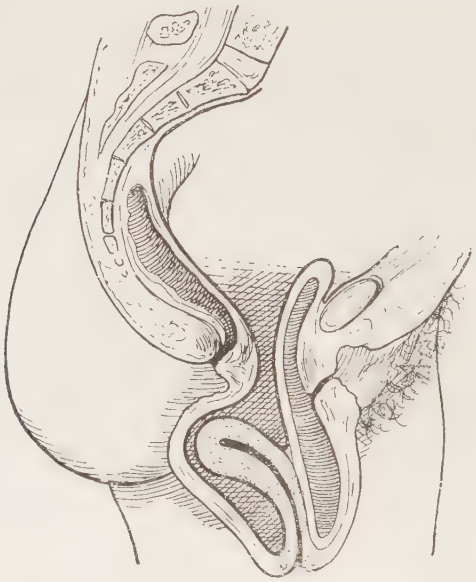


Fig. 34.—Diagram showing final stage of prolapse: vagina turned inside out, forming a bag, at the bottom of which lies the uterus retroverted.

continuous with the vaginal or vulval mucous membrane, and that the vaginal cul-de-sacs are shortened or obliterated. At the bottom of the bag is the os uteri, and on taking the tumour between your thumb and finger near this opening you will feel the neck and body of the uterus lying at the bottom of the bag.

The only thing which could be taken for prolapse would be a tumour, either a uterine or a vaginal fibroid, protruding from the vagina. The patient might take this for prolapse, or prolapse for a tumour, and so might you if you content yourself with a hasty glance. But the presence of the os

uteri at the bottom of the mass, and the uterus felt within it, make its nature clear.

A *rectocele* forms a tumour protruding on straining, reducible when the patient is lying down, covered with mucous membrane continuous behind with that of the vulva, above

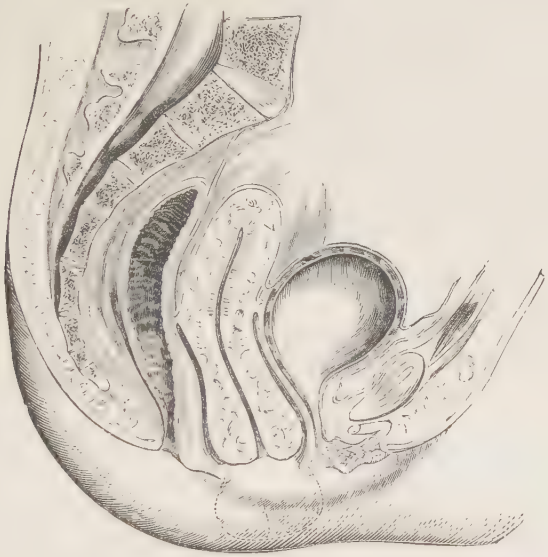


Fig. 35.—Hypertrophy of infra-vaginal cervix: note that when pushed up as far as possible the vaginal portion still occupies the vagina.

with that of the vagina and cervix uteri. If you put your finger in the rectum you will find that a pouch of the anterior wall of the gut descends into the protruded vaginal wall.

A rectocele might at first glance be taken for a tumour, but the signs above described will prevent such a mistake. A protrusion of the posterior vaginal wall may contain a hernia; *i.e.* a prolonged Douglas's pouch with coils of intestine inside it. In this case the finger in the rectum will find that the anterior wall of the bowel remains unaltered when the vaginal wall protrudes; and on manipulation of the protrusion the bowel within it can be felt, and when the bowel slips down or is pressed back, there will be a gurgle.

These are the varieties of prolapse. Their symptoms are alike, with the addition that in cystocele there is some-

times difficulty in emptying the bladder. The patient may tell you that she cannot pass her water till she has pressed the tumour up. And in rectocele, fæces often lodge in the protruded pouch, causing some irritation and difficulty in their expulsion.

The severity of the symptoms depends more on the character of the patient's nervous system than on the amount of the prolapse or the changes occasioned by it. A sensitive patient will complain much and doubtless suffer much, from slight local changes, especially if she be not only sensitive, but inclined by habit (or by injudicious advisers) to dread future ill consequences; while to a robust patient of sound judgment, who is rightly informed of the nature of her ailment, prolapse is a trifle.

Treatment of prolapse.—The treatment of prolapse is of two kinds: (1) mechanical, (2) surgical. Medicine is useless.

The mechanical treatment consists in support by a pessary. Pessaries are of two kinds: (1) vaginal, (2) pessaries with outside straps.

Result of mechanical treatment.—The mechanical treatment of prolapse is imperfect; it is palliative, not curative. In all but the very slightest cases the prolapse recurs when the pessary is left off. The attention the pessary requires while it is worn is unpleasant. The relief a pessary gives is not complete, although very great. Even with the best-fitting pessaries some slight local discomfort still remains.

Vaginal pessaries: their mechanical action.—The best vaginal pessaries are: (1) the ring, (2) the Hodge. Their use is to keep the vagina extended. They do not press up the uterus; if acting well, the pessary does not touch the uterus. The hinder end of the pessary keeps up the posterior vaginal fornix, and so prevents that inversion of the upper part of the vagina which is the beginning of prolapse. The pessary is held in place, while the patient is at rest, simply by the pressure of the vaginal walls upon it. When the patient strains the increased pressure forces the uterus down and the pessary out, inverting the vagina, unless either the vaginal orifice is so small and firm as to resist inversion, or the escape of the pessary is prevented by the pubic bones.

The ring pessary. –This is made of watchspring covered

with indiarubber, and is the most generally useful vaginal pessary (Fig. 36). Its advantages are its softness; its thickness, by which its pressure is diffused; whilst its diameter can be lessened by compression, so that its introduction is less painful than that of a rigid instrument. Its disadvantages are that its posterior end more often causes trouble by pressure on the rectum than the upcurved posterior end of a Hodge's pessary, and that the absence of an upcurve from its anterior end prevents it from being held back by the pubic bones when expulsive effort tends to force it out.

Fig. 36.—Ring pessary.

Hodge's pessary.—This is essentially an oblong frame to extend the vagina. The original instrument, looked at from the side, was sigmoid, corresponding in shape to the curve of the vagina (Fig. 37). A pessary of this shape, like the ring, is held in place by the vagina alone. The best shape for prolapse is one which, looked at from the side, is concave upwards (Fig. 38). When thus shaped its anterior end lies behind the upper part of the pubic arch; during effort the anterior end is pressed against the pubic bones, and thus the pessary is prevented from coming out. Whether it is thus retained or not, depends upon the nearness of the perineum to the pubic arch (Fig. 39). The perineum may be close to the pubic arch (Fig. 40), or more than two inches behind it (Fig. 41). If it be close to the pubic arch, then a vaginal pessary shaped as described will be well retained. If the perineum be far from the pubic arch, the pessary will be

Fig. 37.—Hodge's pessary.

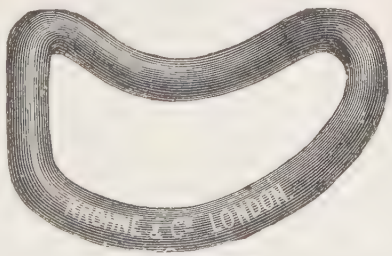


Fig. 38.—Modification of Hodge's pessary, advised by author.

retained solely by the pressure of the vaginal wall upon it, and will be expelled during any unusual effort.

These pessaries are made of various materials—celluloid, which must be softened in boiling water before it can be moulded; vulcanite, which can be softened in boiling water, or, after oiling, in the flame of a lamp; pewter, which is easily bent; aluminium, the lightest and cleanest, which cannot be

Fig. 39.—Average conformation of parts at vaginal orifice.
A, anus; E, fourchette.

bent at all (except in the workshop). None of these can be lessened in size during introduction, and therefore their application is painful. Greenhalgh's pessary is of wire covered with indiarubber, the anterior end being of indiarubber alone. Hence the sides can be pressed together and the instrument inserted with comparatively little pain. The drawback to this is that indiarubber forms, with the vaginal secretions, an offensive compound, and in some patients it is so offensive

and irritating that they cannot tolerate any indiarubber instrument. In some patients a pewter instrument causes irritation. Vulcanite and celluloid are clean, but are sometimes eroded by the vaginal secretions.

Effects of a vaginal pessary.—If a vaginal pessary is retained and keeps up the uterus, relief is almost complete,

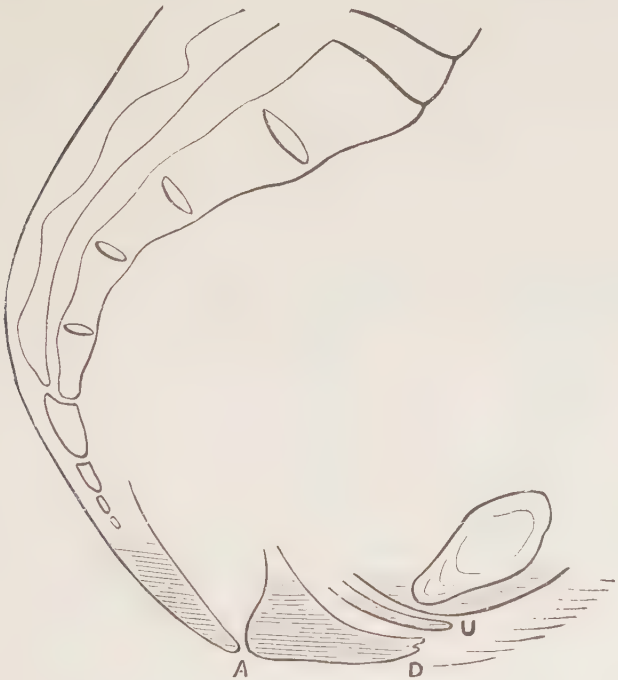


Fig. 40.—Occasional conformation of parts at vaginal orifice. Perineum extending forwards to symphysis.

A, anus; D, fourchette; U, urethra.

and greater than can be attained in any other way. The drawback is the attention required so long as the patient is wearing the instrument. If the instrument fits, no harm results from its presence. If it is too small, the relief given will be less complete. If too large, the vagina will feel tense and the pessary will cause pain. The introduction of a pessary always causes slight pain; but when this has

passed off, the patient ought not to be able to tell whether a pessary is there or not. If she is aware of its presence, it is probably too large. Worse results may happen from badly-fitting instruments. The continuous pressure of a hard instrument on one point may cause ulceration. I have seen a pessary embedded in the vagina, ulceration having taken

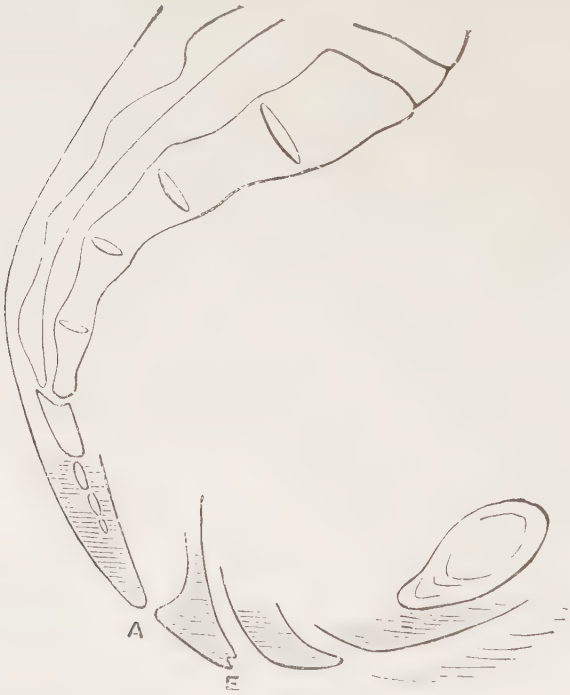


Fig. 41.—Occasional conformation of parts at vaginal orifice. Fourchette 2 inches behind symphysis. (*From measurements in a virgin.*)

A, anus; E, fourchette.

place, and the mucous membrane, having healed over the pessary. Perforation of bladder, rectum, Douglas's pouch, ureters, and evils consequent upon these injuries, have occurred from careless treatment with pessaries. Such things seldom result from Hodge's pessary, but there is no form of pessary with which they are impossible.*

* *See* Neugebauer, "Arch. für Gyn.," Bd. xliii.

To prevent such accidents while a patient is wearing a pessary, the vagina should be daily washed out with clean water, to which an astringent may be added if there be leucorrhœa, borax if there be any irritation, permanganate of potash if there be fœtor. The pessary should be removed and cleansed, and the vagina examined, to see that there are no ill-effects, every three months. With these precautions a vaginal pessary may be worn without detriment for an indefinite time.

Zwancke's pessary.—There is another pessary occasionally used: Zwancke's (Figs. 42, 43, 44). This consists of two wings which can be either folded together or opened out into a platform, being fixed in this position by a screw or clip. It is put in closed, and opened after introduction. It

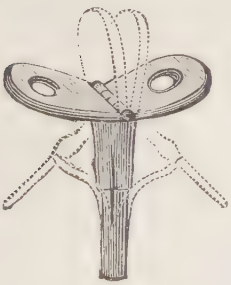


Fig. 42.—One form of Zwancke's pessary; metal screw. The dotted outline shows the pessary closed for introduction.

Fig. 43.—Another form of Zwancke's pessary: vulcanite screw.

Fig. 44.—Another form of Zwancke's pessary: fastening with clip. (*Godson's.*)

then forms a platform lying across the pelvis, resting on the sides of the ellipse which the levator ani and pelvic fascia form. It prevents the uterus from coming outside, but it does not keep it up as high as the cup and stem pessary. It is therefore less efficient. It must be removed each night, and put in again in the morning. If the patient neglect this, it will cause ulceration.

Pessaries with outside straps.—If the vaginal orifice is so large that no vaginal pessary will stay in, the only mechanical treatment possible is a pessary supported from outside. There are two forms—the "cup and stem" and Cutter's pessary.

The cup and stem pessary (Fig. 45).—All varieties of this consist in a narrow column, supported by straps at the base, and having an expanded head, which forms a platform on which the uterus rests. The straps are attached to a waist-belt. Minor variations in shape are numerous, but unimportant. The material is more important. Some are made of gutta-percha, which is cheap, but stinks. Vulcanite is better. Earthenware is perfectly clean, but heavy; being hard, if it is a little too long it will hurt the patient when she sits down (Fig. 46). If it is too short, the vagina will come down by the side of it or the pessary be expelled. Therefore be particular that the pessary is the right length. If a patient is very sensitive to pressure, a soft indiarubber pessary will be less uncomfortable than any other; but if the pressure on it is great, it may then bend and be expelled. The tapes which support the pessary should be fastened quite to its base, so that there is no projection below them, and so fastened that the patient herself can easily take them off and replace them by clean ones. White tapes or white elastic can be more easily changed than indiarubber tubing. The waist-belt should also be so made that the patient can herself make any needful alteration. Instruct the patient to take out the pessary every night and replace it before rising in the morning, and to change the tapes when they are dirty.

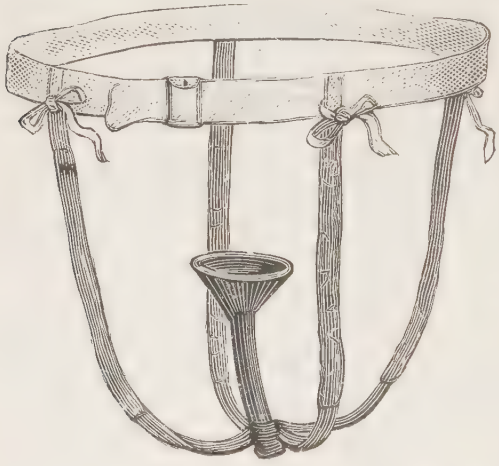


Fig. 45. Cup and stem pessary, as made of guttapercha.

Fig. 46.—Aitken's porcelain stem.

Hughes-Davies's pessary.—Dr. Hughes-Davies has hit

upon the idea of mounting a Hodge's pessary upon a stem, which is supported by straps attached to a waist-belt. In some cases this is more effective than a simple cup (Fig. 47).

Fig. 47.—Hughes-Davies's pessary.

Cutter's pessary (Fig. 48).—This has a crescentic bar, a cup, or a loop (Fig. 48A) mounted on a stem having a perineal curve; from this a piece of indiarubber tubing passes back between the nates, and is connected with a strap which buckles on to a waist-belt. The bar or loop should go into the posterior vaginal fornix. It thus raises the uterus higher than the cup and stem does. The objections to it are, that it is more difficult for the patient herself to adjust, for the top of the instrument tends to get in front of the uterus; and that the indiarubber band going between the nates gets dirty. Most patients will like the cup and stem better, but if it be found that the cup and stem does not give support enough, try the Cutter.

Fig. 48.—Cutter's pessary, with cup.

Fig. 48A.—Cutter's pessary, with loop.

By one of these instruments much relief can be given to every case of prolapse. But the relief is incomplete, for a little discomfort yet remains, and some

patients find the pressure and friction of the straps so disagreeable that they are willing to submit to a surgical operation if they can by it be freed from the necessity for employing such an instrument.

Surgical treatment of prolapse.—Four operations have been practised and are recommended for the cure of this condition.

1, Colporrhaphy.
2, Alexander's operation.
3, Ventral fixation of the uterus.
4, Removal of part or the whole of the uterus.

1. **Colporrhaphy** (κόλπος, "the vagina," ῥαφή, "a seam") denotes a plastic operation for narrowing the vagina. Anterior or posterior colporrhaphy is spoken of according to whether the operation is done on the anterior or posterior vaginal wall. These operations are simple.

Anterior colporrhaphy.—The effect of anterior colporrhaphy used to be attained in days long past by destroying with strong sulphuric acid a large piece of mucous membrane on the anterior vaginal wall, and leaving the surface left after separation of the slough to granulate. This was a clumsy and slow method, but its effect was the same as the neatest dissection and stitching. Anterior colporrhaphy as at present practised consists in dissecting a piece of mucous membrane off the anterior vaginal wall, and bringing together with stitches the sides of the denuded surface, in the hope that over part, if not the whole, of the wound immediate union may take place. The larger the piece removed, the greater the ultimate effect, but the less likely is primary union to take place. Many surgeons have laid stress on small modifications peculiar to themselves in the method of doing it. Thus the piece cut off has been oval, or round, or triangular, or diamond-shaped, or oblong. It matters not what the shape is, so long as the piece removed is large. Nor matters it much whether wire, silkworm gut, silk, or catgut be used for the stitches. I prefer fine catgut, for then you spare the patient the discomfort of their removal; you can leave them to be absorbed. Some operators, instead of removing a large piece,

have denuded strips of mucous membrane on opposite sides of the vagina, and brought them together so as to enclose a pouch, or form a shelf. These operations are more difficult to do, and, if successfully done, shut off spaces in which

Fig. 49.—Clover's crutch.

secretions may accumulate—an effect which I think undesirable. Some have stitched from side to side; others round the periphery. I think the former better, for you want to narrow, not to shorten, the vagina. I think the best shape is oval, with the long axis parallel to that of the vagina; and I repeat that the great thing is to take away enough.

I describe what I take to be the essential features of the operation.

Mode of operation.—You need the following instruments:—

Clover's crutch (Fig. 49).
Volsella.
Toothed dissecting forceps (Fig. 50).
Four pressure forceps.
Scalpel.
Half-curved needles and needle-holder.
No. 1 catgut.
Sponges, sponge-holders, douche, etc.

Put the patient in the lithotomy position. Have the cervix held down as far as possible with the volsella, so as to extend the anterior vaginal wall. Mark out with the scalpel the outline of the oval piece of mucous membrane you intend to remove. Then dissect it off. A few small vessels may spout, but they can be closed by torsion, or by the pressure of the stitches. Unite the sides by stitches passed from side to side (Fig. 51). Take care that each stitch enters and emerges through the mucous membrane so close to the denuded surface that, when tied, no mucous

Fig. 50.—Toothed dissecting forceps.

membrane may be tucked in, and that each stitch takes up a good bundle of raw fibro-cellular tissue. If the stitching is neatly done, you should get union over a large part of the line of incision. Such union accelerates healing, but only slightly affects the final result. If no union takes place, but the whole wound heals by granulation, the effect is much the same.

Effect of anterior colporrhaphy.—This operation diminishes the volume of the anterior vaginal wall which comes down, but it affects not the fact of descent. It has been recommended for cystocele, either with or without descent of the uterus. But alone it does no permanent good in

cystocele. While the patient is in bed the parts regain a little of their tone; but after she has been up and about a few weeks the bladder comes down just as before; the dragging pain and the bladder irritation become the same; and the only difference between the patient's condition before and after the operation is that the protrusion is not quite so big—an unimportant gain. Some think that it is a useful accompaniment to posterior colporrhaphy; and, as it is not dangerous or hurtful, there is no objection to doing it at the same time. When the anterior vaginal wall is very redundant it may be thus useful; but in most cases it makes no important difference.

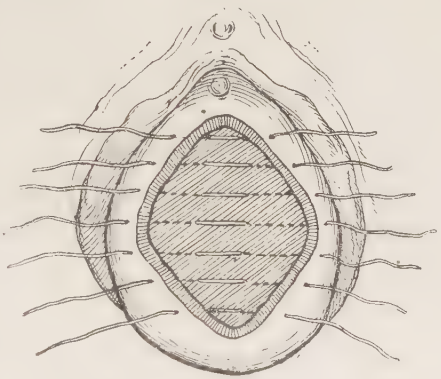


Fig 51.—Anterior colporrhaphy.

Posterior colporrhaphy.—This means narrowing the posterior vaginal wall and extending the perineum forwards. It differs from the operation for incomplete rupture of the perineum (one seldom required) in that the latter operation is limited to restoring the perineum to its natural length, and that in doing this it is desirable to remove no skin or mucous membrane, but to make a raw surface by splitting, so that in the event of the patient having more children the new perineum may not oppose abnormal resistance to delivery. Posterior colporrhaphy for prolapse should only be done in women who have finished child-bearing, and the raw surface should be made by dissecting off a large piece of mucous membrane, carrying the denudation high up and far forwards. The larger the piece you take away, the better the result, unless you extend the perineum so far forwards as to interfere with natural functions.

Different surgeons have described different ways of doing this operation. The differences consist in the shape of the piece removed. Some have denuded a triangular piece

with the point high up on the median raphe. Others have denuded two triangles, one in each of the hollows at the side of the raphe. The shape of the denuded area is unimportant in comparison with its size. The ways of putting in the stitches have been various; as long as the raw surfaces are brought together, it matters little how the stitches run. Nor is the suture material important. I prefer fine catgut, which you need not take out. The objection to this is that, if there is any strain on the stitches, fine catgut is not strong enough. For those stitches on which strain is thrown I prefer silkworm gut.

How to do the operation.—The following instruments are needed :—

Clover's crutch.
Duckbill speculum.
Scalpel. Scissors.
Toothed dissecting forceps. Six pressure forceps.
Large curved perineum needle in handle.
No. 1 catgut. Silkworm gut.
Razor, sponges, T bandage, iodoform, etc.

The patient should have had the bowels cleared out by an aperient the evening before, and an enema on the morning of the operation day. The bladder should be empty. Put the patient in the lithotomy position. If there is much hair on the labia shave them. Let an assistant hold the anterior vaginal wall up with a duckbill speculum. With the scalpel map out the surface you intend to denude. Put a temporary stitch, leaving the ends long, in the middle of the vagina at the point up to which you intend to denude the surface. By this you can have the parts held tense while you denude. Cut along the posterior boundary of the vulva, ending forwards about half an inch behind the meatus urinarius. From this point carry the incision up in a curve, the apex of which is on the median raphe an inch and a half or two inches

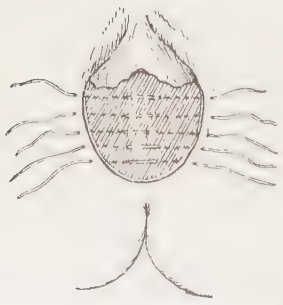


Fig. 52.—Posterior colporrhaphy.

above the vulva (Fig. 52). With the finger, aided by scalpel or scissors, strip off the mucous membrane over the area mapped out; secure with forceps arteries that spout. The denudation finished, stitch the raw surfaces together. Begin low down with stitches on each side of the middle line, and insert each stitch further outwards and upwards. If a large needle is used, it can be passed through both sides. If you have not so large a one as this, pass the needle through from before backwards, thread it after passing it, and withdraw it carrying the thread. The essential thing is to enter and bring out the stitches through the mucous membrane so close to the raw surface that, when tied, no mucous membrane is folded in. The only stitches upon which strain is thrown are some of the lower ones; catgut may be safely used for the higher stitches. After sewing up the wound dust the parts with iodoform, apply a pad of Gamgee tissue or iodoform gauze, and keep it in place with a T bandage.

The great thing is to make the raw surface big enough. The bigger it is, the easier it is to bring the raw surfaces into contact by sutures, and the more the vagina will be contracted when healing is complete. If the stitching is perfect, quick union takes place. If imperfect, there is incomplete union, and slow healing of the rest of the raw surface by granulation, and, in consequence, slower convalescence; but the effect upon the prolapse is the same.

Effect of colporrhaphy. — The best result that colporrhaphy will give in prolapse is gained by combining anterior with posterior colporrhaphy. It narrows the lower part of the vagina so as to oppose the escape of the procident mass, or of a pessary. The more the vagina is narrowed, the greater the effect. The operation enables the vagina to retain a pessary, and thus helps the patient to do without outside straps. If no pessary is put in, the uterus may keep up for a time. But sooner or later the process by which the original prolapse developed takes place over again. The anterior vaginal wall comes down, acts like a blunt wedge, and gradually stretches open the vaginal orifice until at length the uterus comes down, and the condition becomes the same as before the operation. But if a pessary is inserted, the extension forwards of the

perineum which the colporrhaphy produces presses the anterior end of the pessary well forwards, near the top of the pubic arch; and then when the patient strains, the pessary is forced against the pubic rami and held back by them; and thus the vagina is kept extended, and its orifice saved from any dilating force.

Posterior colporrhaphy *alone* is called for when there is rectocele—that is, descent of the posterior vaginal wall and rectum, without descent of the uterus. Rectocele without uterine prolapse is a rare condition, but when it is present an extensive posterior colporrhaphy will cure the patient.

The risk of colporrhaphy, if done by an operator careful to secure asepsis, is practically nothing, death from the anæsthetic or from tetanus being the only risk.

Colporrhaphy should only be done in women past the age of child-bearing. It is of no use for prolapsus unless so done as to contract the vagina much. Now if the vagina be much contracted, and the patient become pregnant, she will have a difficult labour, either ending in a big tear or needing extensive incisions into the soft parts.

2. **Alexander's operation**—that is, shortening the round ligaments. If this operation is successful, the body of the uterus is pulled towards the symphysis pubis; but there is no important change in the position of the bladder or the vagina. Now in prolapse there is descent of the vagina and bladder, as well as of the uterus. Alexander's operation is therefore, for prolapse, useless. If done, the only difference in the patient's condition is that, instead of the uterus coming down leaning back, it comes down leaning forwards. I therefore do not here describe this operation.

3. **Ventral fixation, or hysteropexy.**—This consists in opening the abdomen and stitching the uterus to the abdominal wall. If successful, this operation is the most perfect cure that at present can be attained.

How to perform ventral fixation.—You will need one assistant, besides the anæsthetist, and the following instruments:—

Scalpel.
Toothed dissecting (conjunctiva) forceps.
Six artery forceps.

Two blunt volsellæ.
Hagedorn's needle, No. 4, and holder.
Silkworm gut.
No. 1 catgut.
Scissors.
Gamgee tissue, iodoform, sponges, razor, binder, etc.

Put the patient in the raised pelvis position and shave the pubes. Cut through the skin and subcutaneous connective tissue for two or three inches (more or less, according to the fatness of the patient) in the middle line midway between the pubes and the umbilicus. Secure bleeding points with pressure forceps. Divide the linea alba to the same extent, and separate the recti. With the finger strip the peritoneum off the surface of each rectus muscle for about an inch outwards from the incision on each side. Pick up the peritoneum with conjunctiva forceps, and open it, cutting with the flat of the knife parallel to the belly wall. Put your finger in the opening, and with it as a director extend the opening till it is as large as the incision in the belly wall. Now put two fingers of the left hand down into the pelvis and feel for the uterus. Put the index-finger in front of it, and the middle finger behind it, and with these fingers as a guide and guard, pass down a blunt volsella to seize the uterus. With the volsella pull the uterus up to the wound. Take Hagedorn's needle, threaded with silkworm gut; enter it close to one Fallopian tube; pass it through the fundus till it comes out opposite the other Fallopian tube; then pass each end of the suture through the abdominal muscles (not peritoneum) about an inch from the margin of the wound, and make it emerge through the skin rather nearer the middle line. Take a similar needle, threaded with No. 1 catgut. Pass it through the fundus uteri parallel with and about a quarter of an inch behind the silk suture. Bring the end out on each side through the rectus muscle only, entering it about an inch from the middle line, and bringing it out between skin and aponeurosis. Pass a similar stitch in like manner about a quarter of an inch in front of the silk stitch (Figs. 53 and 54). Remove the volsella, and for the moment let the uterus drop. Now put in a stitch of silkworm gut in front of and behind the uterus to close

the abdominal wall. Enter each stitch through the edge of the peritoneum. Pass it through a good bundle of muscular tissue, and bring it out through the skin about a third of an inch from the edge of the wound. When all the stitches have been put in, pull up the uterus by the middle stitch, and holding it well applied to the wound, tie the two catgut stitches and cut their ends short. Then tie the middle uterine stitch, and, lastly, the two stitches in front and behind the uterus.

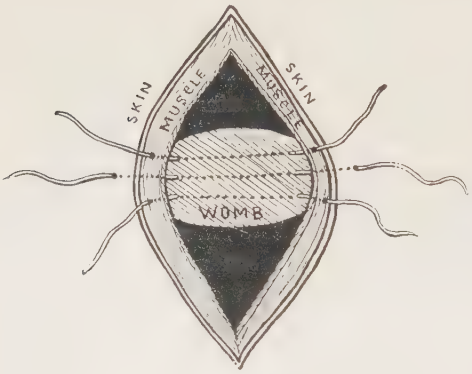


Fig. 53.—Ventral fixation: diagram showing uterine stitches.

Convalescence after this operation is free from unpleasant symptoms. The silkworm gut stitches should be taken out on the eighth day. The patient should stay in bed a fortnight.

Objections to ventral fixation.—These are: (1) Its risk. You cannot say that any operation in which the peritoneum is opened is devoid of risk, for oversights will occur in the practice even of the most careful. But the risk is very small; to say that it is as great as that of a labour is to overstate it. It ought not to be greater than that of an operation for haemorrhoids. The operation is so easy that it is hardly possible for an operator of ordinary manual dexterity to blunder. (2) The result is not always lasting. Adhesions within the peritoneum are

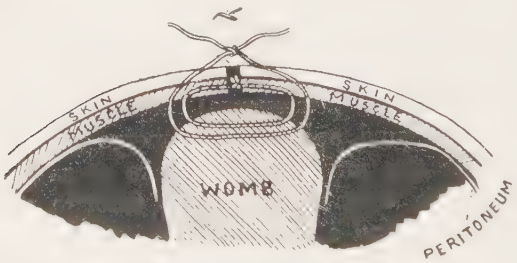


Fig. 54.—Ventral fixation: diagram showing stitches tied.

sometimes absorbed. Different patients differ as to the readiness with which peritoneal adhesions are formed in them, and the persistence of these adhesions. Pleurisy will in one patient produce great serous effusion; in another great thickening of the pleura. So in the pelvis; in some cases of inflammation there is serous effusion; in others fibrous thickening; we know not why. In some patients the adhesion binding the uterine to the parietal peritoneum is quickly absorbed; in others it lasts for years. We cannot predict the one course or the other. As yet, we have not enough recorded experience to tell us in what proportion of cases adhesions are absorbed. But they are absorbed often enough to make me think stitching of peritoneum to peritoneum an unsatisfactory proceeding. I therefore have, in describing the operation, advised suture of uterine peritoneum to muscle, not to parietal peritoneum. When bowel is stitched to muscle, as in colotomy, it is not found that the adhesions are absorbed. It remains to be seen how long adhesions of uterus to muscle will last. We must at present frankly tell our patient that the result may not be permanent. This is not a reason against trying an operation the immediate result of which is greater relief than any other treatment can give, and relief that often lasts for years. I have known the relief last eleven years. But after abdominal section, ventral hernia may first develop after the scar has held firm for twelve years; and possibly the new attachment of the uterus may also, after many years, give way. The patient must accept the operation with this drawback. (3) The operation lifts up the uterus. If the vulval orifice is very large, there may be still protrusion of the vaginal mucous membrane. I think it well, therefore, to precede ventral fixation in women past child-bearing by posterior colporrhaphy. (4) It is said to cause difficulty in labour, should the patient become pregnant. It does not always do so; and in the cases reported as illustrating such difficulty I am not sure that the ventral fixation was the cause of the difficulty.*

Ventral fixation after colporrhaphy, if the result be

* *See* Andrews, "Journal of Obstetrics and Gynæcology of the British Empire," 1905.

permanent, relieves the patient of any necessity for the continual readjustment of the pessary, and lifts the uterus up effectually. At present I do not advise ventral fixation in cases in which the womb can be comfortably kept up by a pessary. For cases in which vaginal support is ineffective, I advise ventral fixation with colporrhaphy.

Some have proposed to stitch the uterus to the abdominal wall without opening the abdomen. It is more dangerous to put stitches into the peritoneal cavity without seeing what they are going through than it is to open the belly. Have nothing to do with such a blind proceeding.

4. **Removal of part of or the whole uterus.**—(1) *Amputation of the cervix.* When the cervix is very thick and ulcerated, it may be well, at the same time that colporrhaphy or ventral fixation is done, to cut off the thick cervix. It may provoke straining, and perhaps be painful or tender. Such a cervix fulfils no useful physiological function that we know of, and therefore you do no harm by cutting it off. Amputation of the cervix alone without other treatment is without any effect upon prolapse.

(2) *Vaginal hysterectomy.* I mention this, because it has been often done for the cure of prolapse. If you take away the uterus, of course, *it* cannot come down. But I have explained that the descent of the uterus is only the palpable sign, not the important morbid change. The descent of the pelvic floor is the essential condition, and this remains after the uterus has been removed. The vagina descends as before, only that at the bottom of it there is a scar instead of the os uteri.

In elderly widows, prolapse can be cured by removing the uterus *and vagina.* This is obviously only to be done in those too old to think of re-marriage. The objections to it are those which apply to every operation on very old people, viz. that in them tissues are apt to heal slowly and badly.

Myorrhaphy.—Operations have been devised by Hey Groves* in this country, and Delanglade and others† in France, for uniting the two halves of the levator ani muscles. This is, in principle, a sound method of treating

* "Obst. Trans," 1905.

† *See* Batigne, "La Gynécologie," April, 1905.

cystocele. But, as yet, it is not settled what is the best technique. We know not yet whether the result is permanent. As far as I can judge, this operation is only likely to be of service in slight and recent cases of cystocele: for in old cases of great prolapse, the muscular fibres are so stretched and atrophied that they are difficult to find, and so friable when found that sutures tear through them.

CHAPTER XI.

UTERINE DISPLACEMENTS.

II.—RETROFLEXION.

Names and definitions.—When the body of the uterus is tilted backwards and downwards, the cervix upwards and forwards, the uterus being straight, it is said to be *retroverted*. When the cervix is in its natural position, but the body is bent back, the uterus is said to be *retroflexed*. In most cases retroversion and retroflexion are combined; the uterus is bent back, but the cervix runs more forwards and less downwards than it ought to; hence neither term alone is quite appropriate to these cases. "*Backward displacement*" is correct English, but is long; "retroversion and flexion" is worse. As there is nearly always bending, and as the degree of bending is unimportant, I shall apply the word retroflexion to the usual kind of backward displacement.

Clinical classification.—From a clinical point of view cases of retroflexion may be divided into five groups:—

1. Without symptoms.
2. With symptoms of descent.
3. With congestion.
4. Suddenly produced.
5. With adhesions.

When not important.—(1) Retroflexion is often present in the healthy without symptoms. In such it neither brings with it liability to ill-health, nor interferes with fertility. We know not how numerous such cases may be, because they come not for examination.

(2) Retroflexion is usually present with prolapse. If the only symptoms are those of prolapse, and the body of the uterus is not tender, the combination of retroflexion with prolapse is not a factor of moment in the case.

When important.—(3) Retroflexion sometimes produces venous congestion of the body of the uterus.* Behind the uterus is the pouch of Douglas, bounded on each side by a peritoneal fold running from the uterus back to the sacrum. These folds in different subjects vary much in position and sharpness. Sometimes they are gently convex undulations. If so, the uterus may be bent back without

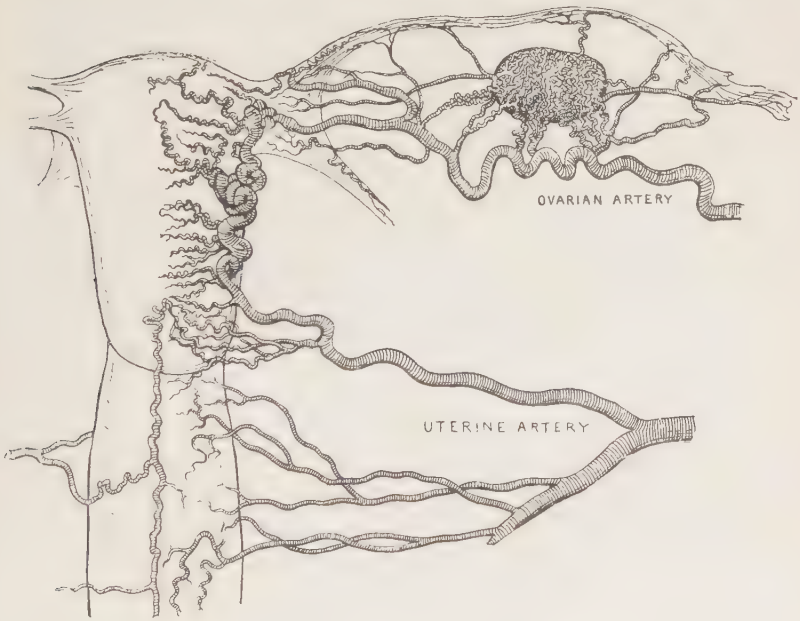


Fig. 55.—Showing blood supply of uterus. (*After Hyrtl.*)

effect upon its circulation. Sometimes they are sharp bands running backwards nearly parallel to one another. The blood returns from the uterus by veins that run outwards in the broad ligament (Fig. 55).* If the body of the uterus sinks between sharp and firm utero-sacral ligaments, the veins in the broad ligaments are pressed against the sharp lateral boundaries of Douglas's pouch, the return of blood through them is hindered, and congestion of the body of the uterus is

* *See* Sir J. Williams on the circulation in the uterus, "Obst. Trans.," vol. xxvii.

the result. It in consequence becomes tender and sometimes a little swollen.

It is difficult rightly to estimate the frequency of these cases as compared with those in which retroflexion produces no effect, because healthy women are not examined, and obstetric physicians only have limited opportunities of post-mortem examination. Judging as nearly as I can from clinical and post-mortem observation, I think that in about one case in ten retroflexion produces congestion. *

Symptoms from retroflexion.—In most cases in which there is congestion of the body of the uterus from retroflexion, the retroflexion is brought about by prolapse, and the symptoms are those of prolapse plus those of uterine congestion. The pain is greater, and is more especially in the sacrum; it is more persistent, and less quickly relieved by lying down. In some rare cases which will be afterwards described it is not relieved by lying down. In about 38 per cent. of those who come for treatment, pain with menstruation is increased or acquired. The menstrual flow is altered: in about 40 per cent. increased, sometimes in quantity, sometimes in frequency, sometimes in both.† It is occasionally diminished; we know not why. The body of the uterus is tender; hence in about 45 per cent. there is pain on defæcation,† especially if hard scybala are passed. Sexual intercourse is painful. Remember that these symptoms are often produced not by the retroflexion, but by some other concomitant condition.

The diagnosis of retroflexion.—On vaginal examination a lump is felt behind the uterus. This lump is the body of the uterus. The problem in diagnosis is to identify it as such, and to exclude every other condition. (1) The lump is of the size, and has the symmetrically rounded shape of the uterine body. (2) On bimanual examination you cannot feel the body of the uterus in its natural position above the cervix. If the lump is a tumour or a pelvic effusion pushing the uterus forwards, you will feel the body of the uterus with the external hand more easily than usual, because it is

* *See* papers by the author, "Obst. Trans.," vols. xxxiii., xxxiv., and xxxv.

† For evidence of these statements see papers by the author in "Obst. Trans.," vols. xxxiv. and xxxv.

pushed nearer the abdominal wall. (3) If bimanual examination is not decisive, as may be the case in a fat or nervous patient, ascertain from the history that there is no reason to suspect pregnancy, and if there be none,

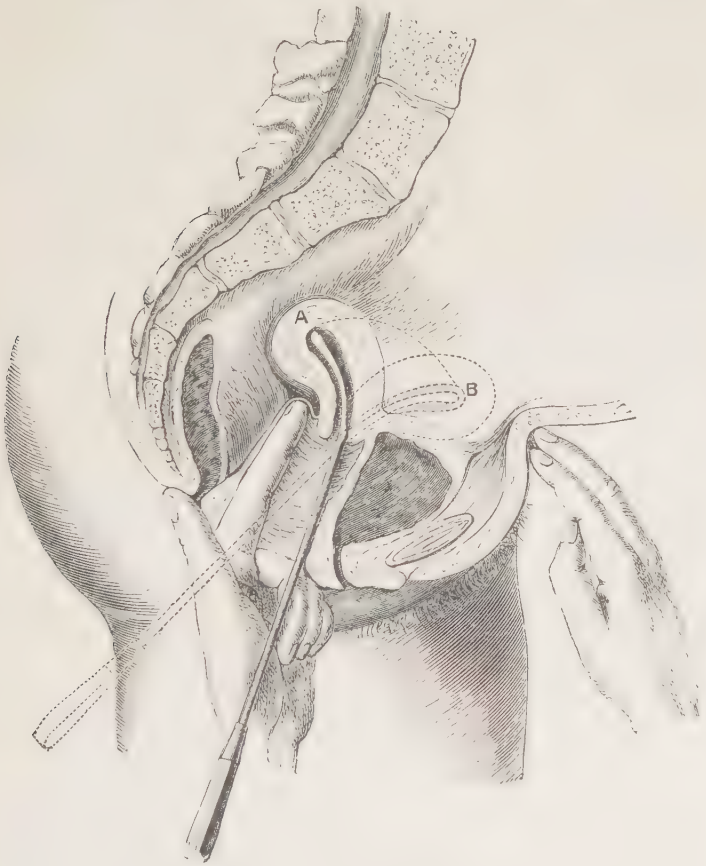


Fig. 56.—The diagnosis of retroflexion by the sound, which enters with the concavity backwards (A). When rotated, so that it comes into the position shown by dotted outline (B), the retro-cervical swelling is removed, and the body of the uterus can be felt by the hand on the abdomen. (*After R. Barnes.*)

pass the sound. If the lump is the body of the retroflexed uterus, the sound will pass upwards and forwards for little more than an inch; but turn the concavity backwards, and it enters the full length of the uterine canal (Fig. 56). If the flexion be sharp you may have to bend the sound a little

more before it will enter. There is one possible fallacy in the diagnosis made from the direction in which the sound enters. The uterus may be retroflexed, but the lump you feel may not be the uterine body, but a swelling of another kind below the uterine body (Fig. 57). In order to be certain that the lump is the uterine body, move the handle of the sound (not its point) in a semicircle, so that the point may move upwards and forwards. If the lump is the uterine body, the sound will lift it upwards and forwards, so that when the concavity of the sound looks forward you can no longer feel the lump.

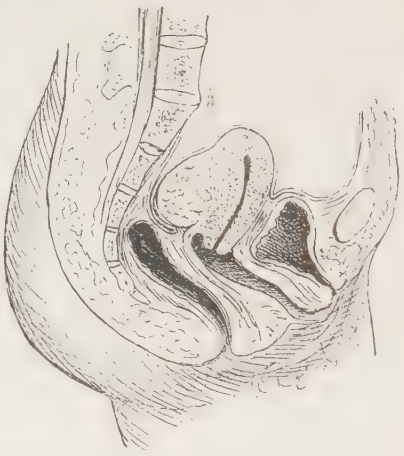


Fig. 57. Retro cervical swelling formed by fibroid in posterior uterine wall, and feeling like retroflexion.

Mechanical difference between retroversion and retroflexion. — Retroversion can take place only if the cervix is movable, so that it can rise as the body sinks. If the attachments of the cervix are firm, so that it cannot rise when the body is driven down, the uterus will be bent. The resistance of the uterus to bending will make the cervix move a little forwards, and such movement will pull on the utero-sacral ligaments, and make them more tense and more able to hold down the uterus than they were before. Uterine congestion is more frequent with retroflexion than with retroversion, not because the bending of the uterus is in itself important, but because tense utero-sacral ligaments favour retroflexion.

Difference between retroversion and retroflexion. — There is no difference between the *symptoms* of retroflexion and retroversion. But there is a great difference from the point of view of *treatment*. In retroversion the uterus is comparatively rigid, hence when a vaginal pessary extends the vagina, pulling the cervix back and up, the body of the uterus moves forwards. But great bending of the

uterus implies softness. Then the pessary pushes up the posterior fornix, pulls up the cervix, but only makes the bend more acute. The end of the pessary lies in the concavity of the bend (Fig. 58). When the uterus is either nearly straight or sharply bent, you can tell how it will behave when a pessary is put in; but in the intermediate cases in which the uterus is neither straight nor sharply bent, the only way to find out what a pessary will do is to put one in. In a few cases in which, when a vaginal pessary is applied, the body of the uterus does not rise and move forward, if it be lifted into anteversion with the sound, it will stay there; but in most such cases it falls back directly the sound is withdrawn.

Fig. 58.—Showing occasional vicious action of Hodge's pessary. The end of the pessary is in the concavity of the bend. (*After R. Barnes.*)

Changes associated with retroflexion.—With retroflexion there often go swelling and erosion of the posterior lip of the cervix. This is because the vessels which supply the vaginal portion run downwards to it. Hence when the uterus is bent back, these vessels may be compressed. This is particularly likely to cause swelling of the posterior lip if the cervix has been torn in childbearing, so that the posterior lip is isolated, and only receives blood from above.

With retroflexion there often go tender ovaries. Any painful disease of the pelvic organs is apt to cause so-called ovarian pain; that is, reflected pain over the area supplied by the tenth and eleventh dorsal segments of the spinal cord; there is nothing peculiar to retroflexion in this. As the body of the uterus sinks, it drags upon the ovaries and tubes, and therefore the ovaries are often so low down that they can be felt through the vagina without the aid of the hand on the abdomen. This is called *prolapse of the ovary*. It occurs without retroflexion as well as with it, but is more frequent with retroflexion, for the reason given. If the ovary be tender, its descent exposes it to contact, and the patient's pain is greater. Theories may easily be constructed to explain how descent of the ovary might make it tender, but change in the position of the ovary does not make it tender; it only makes it more easily felt. Such ovaries often cease to be tender without altering their position.

Retroflexion without prolapse.—In many cases of retroflexion the amount of descent is very slight, and in some is not greater than that which takes place during respiration in every woman. Tension of the utero-sacral ligaments, such as causes congestion of the retroflexed uterine body, tends to hinder prolapse. Therefore when retroflexion is combined with much descent, the body of the uterus is seldom tender. It follows that the amount of descent is no index to the need for treatment. The indication for treatment is the presence of symptoms such as retroflexion causes, coupled with tenderness of the uterine body.

Exceptional cases of sudden retroflexion.—(4) In a healthy woman the uterus may be suddenly retroflexed during an unusual strain, such as lifting something heavy or recovering equilibrium after a slip. Such an effort suddenly raises the pressure within the abdomen. If at the time of the effort the uterus is so far leaning back that the pressure falls on its anterior surface, the body of the uterus may be driven into Douglas's pouch. If the side walls of the pouch are tight enough to press on the veins running from the uterus in the broad ligament, they will obstruct the return of blood from the uterus. The patient will complain of sudden pain, referred especially to

the sacrum, and she may feel faint and giddy and perhaps sick. If the patient lies down, the uterus may rise, the symptoms pass off, and no further trouble follow. But if the sides of Douglas's pouch are not only tight, but very close together, they may nip the body of the uterus, and so prevent it from rising. Such nipping is rare.

These cases are infrequent, but important, because if properly treated they get well in a few days; while if not treated, pelvic trouble may last for years. They may occur in

Fig. 59.—Patient in knee-elbow position: the intra-abdominal pressure acts downwards and forwards, the vagina is expanded with air, the uterus pulled upwards and forwards.

nulliparæ, and even in virgins. I think, although the rarity of such cases prevents proof, that they are commoner in such patients than in the parous, for the stretching in childbirth of the pelvic floor relaxes the parts which form it.

Treatment of acute retroflexion. This consists in three things. (1) Removal of the cause that is, the downward pressure which produced the displacement. To do this thoroughly, order the patient to stay in bed. (2) Liberation of the uterus, if incarcerated. This is easy. Push the uterine body up with the finger either by the vagina or by the rectum. If it be really held down by the sides of Douglas's pouch, you will feel it slip suddenly past the detaining bands. (3) Preventing recurrence. Although freed from

incarceration, the uterus may remain retroflexed; if so, it will remain liable to the recurrence of incarceration and obstruction of its circulation. Direct the patient, if she feel any return of the pain which accompanied the displacement, to place herself on her elbows and knees, and remain in that position until the pain has gone. In this position the direction of the pressure within the abdomen is reversed, instead of pushing the uterus down it tends to pull it up (Fig. 59.) Your patient will find this position relieve the pain. If this treatment be applied early, a few days of its continuance will cure the patient. She will find that she is free from pain first while lying on her back, and then when she is up and about.

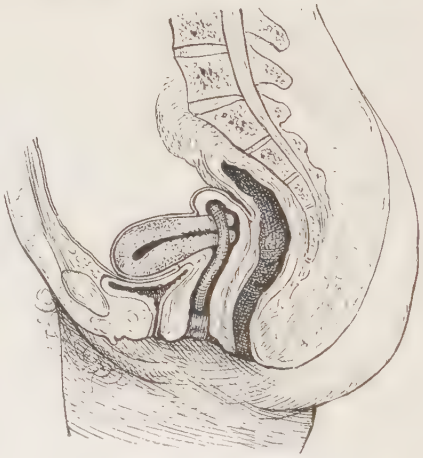


Fig. 60.—Hodge's pessary anteverting uterus.

Treatment of chronic retroflexion.—If the body of the uterus is *not tender*, the treatment is the same as that of prolapse; it matters nothing whether the uterus is straight or bent, anteverted or retroverted. All that is wanted is to support it. A ring, or a Hodge's pessary, should be applied as for prolapse, and worn with the same precautions. But if the body of the uterus is tender, complete relief will not be given unless the uterus is kept in a position of anteversion. A hard pessary which presses on the tender uterine body will make the patient's pain worse.

Choice of a pessary.—In the treatment of retroflexion the first thing to aim at is to put the uterus in a position of anteversion (Fig. 60). Apply Hodge's pessary, and feel bimanually the position of the uterus. If the displacement be not reduced, pass the sound, and with it put the uterus into a position of anteversion. The precise shape of the Hodge's pessary is unimportant. The essentials are: it

should antevert the uterus; no part of the vagina should feel tense; and the pessary should cause no pain. Some inventors have made the lower end narrow, or pointed, and curved down, in accordance with the curve of the vagina. This curve is unnecessary. If the anterior end be curved up, and is broad, it is held in the upper part of the vagina, and in case of expulsive effort is held in place by the pubic bones. Others have made the posterior end of the pessary very thick, or concave, that its pressure on the body of the uterus may be more diffused, and therefore less painful. But the pessary ought not to press on the body of the uterus at all.*

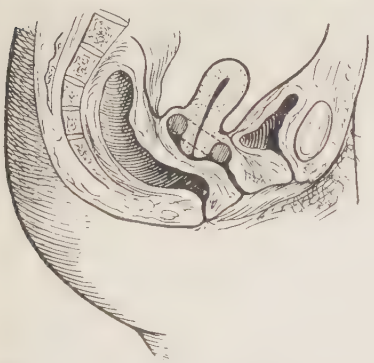


Fig. 61.—Ring pessary anteverting uterus.

If you can get a pessary to fulfil the above requirements, you will almost completely relieve your patient. As in prolapse, the cure by a pessary is seldom complete. With the most effective there is still a little bearing-down on exertion, and a little irritation of bladder, but these troubles are reduced to trifles. Dyspareunia, if due to the displacement, will cease, and the increased menstrual loss and pain, unless due to some independent cause, will be removed.

Fig. 62.—Ring pessary, with fluid in its interior.

If you cannot get the uterus anteverted by a Hodge's pessary, use a thick ring of watch-spring covered by indiarubber. A ring will often antevert the uterus as effectually as a Hodge

* A great writer has said, and it has been copied into more than one text-book, that Hodge's pessary has a "leverage" action; that when the anterior end moves down, the posterior end moves up. This is not the case; when the anterior end moves down, the posterior end moves down too. The only leverage action of Hodge's pessary is that it may be said to make the uterus into a lever, the power being applied through the posterior attachment of the vagina, the fulcrum being the attachments of the uterus in front, the weight the body of the uterus.

(Fig. 61). Sometimes when you apply a ring which does not at first antevert the uterus, in a few days you will find that the uterus has risen, and is in anteversion. If the pressure of this is painful, although the vagina is not tense, there is a softer ring made of tubular indiarubber containing fluid in its interior, sold as the "Perfectus combination fluid pessary" (Fig. 62). These instruments, if they do not antevert, push up the uterus by extending the vagina and interposing the thickness of the pessary between the uterine body and the level of the posterior vaginal wall. In many cases this small amount of support is enough to relieve the uterine veins from pressure, and thus diminish uterine congestion. Relief is not so speedy as from a Hodge's pessary, which anteverts the uterus, but it is considerable.

Results of treatment by pessaries.—In cases in which the symptoms are those of prolapse only, and the body of the uterus is not tender, treatment by vaginal pessaries is successful. I have above stated that cases in which the displacement causes symptoms of prolapse only form about nine-tenths of the whole. In most of the remaining tenth (in which there is congestion of the uterine body) a vaginal pessary is effective. If we take four out of five as the proportion—and I think this not too high—we have 98 per cent. as the proportion in which treatment by a vaginal pessary is effective; about one in fifty as the proportion of cases calling for other methods.

How long must the pessary be worn?—This is a question often asked. Many patients who have been relieved by vaginal pessaries, after wearing them for many months or years, leave them off, and the symptoms do not return, whatever the position of the uterus. Other patients, in whom the immediate result is as good, and who have worn the instruments as long, when they leave them off find all the symptoms return at once.

The difference depends upon the degree to which the displacement depends upon structural defects of the pelvic floor. If the uterus has sunk back because the pelvic floor has been permanently weakened by tearing, or by overstretching, then it will sink again directly the mechanical support is removed. If, on the other hand, the displacement

was due to relaxation in the tone of the muscular and fibrous structures of the pelvic floor, like that which produces the slighter degrees of flat foot and of lateral curvature of the spine, then the pessary may be removed if the patient's general health has improved, and the displacement will not return; or if it return it will cause no symptoms. It is difficult correctly to predict how long the pessary will need to be worn. Therefore avoid a definite statement; but if pressed, judge by the state of health of the patient, and the amount of injury to the pelvic floor — as evidenced by the size of the vaginal orifice, the firmness of the perineum, and the amount of vaginal prolapse. If the patient is otherwise in good health, the vaginal orifice large, and there is commencing cystocele, she may have to wear a support for many years, if not for the rest of her life. If the perineum is firm, and there is no cystocele, if the patient has lost flesh, is nervous, sleeps badly, has a poor appetite, and suffers from pains elsewhere than in the pelvis, then it is likely that when her health is re-established she will need no further local treatment. The commonest cause of the debility along with which retroflexion occurs is childbearing and the care of children. Now retroflexion brings with it a tendency to premature cessation of childbearing, which is in such cases a beneficial effect.* The atrophic changes of old age often cure prolapse of slight degree. But I know of no data from which to say in which cases and at what age this may be expected.

Fig. 63.—Hodge's pessary supporting but not anteverting the uterus. Efficient if uterus be not tender; aggravating the symptoms if the uterus be tender.

The cases in which treatment by a vaginal pessary fails are

* For evidence see paper by the author, "Obst. Trans.," vol. xxxiii.

those in which, with little or no prolapse, the uterus is sharply retroflexed, so that a vaginal pessary goes into the concavity of the bend (Fig. 63). If with this the margins of the pouch of Douglas are tense enough to incarcerate the uterus, or to press upon the veins in the broad ligaments, the symptoms will be enough, unless the patient be exceptionally robust, to unfit her for the ordinary duties of life. When the uterus has been for long sharply bent, there is some atrophy of the uterine wall at the angle formed by the concavity of the bend. This produces a tendency for the flexion to be reproduced after it has been corrected, and adds to the difficulty of cure by a vaginal pessary. The continued presence of a vaginal pessary in the concavity of the bend increases this atrophy.

There are four modes of treating cases of retroflexion in which a vaginal pessary does not give relief. These methods are: (1) an intra-uterine pessary; (2) vaginal fixation; (3) Alexander's operation; (4) ventral fixation. None of them is free from danger, and therefore before recommending any, you ought to be certain that the amount of the patient's sufferings is not exaggerated, and that the displacement and nothing else is the cause of the patient's illness.

1. **Intra-uterine pessaries.**—The best of these are rigid stems, of a diameter smaller than that of the uterine canal, made of glass, vulcanite, or aluminium. The stem is placed in the uterine canal, and while it is there the uterus must be straight. If a vaginal pessary be applied at the same time the combination of the two may keep the uterus anteverted.

Such instruments were at one time largely used, and often caused fatal peritonitis; often, too, peritonitis, which, though not fatal, made the patient a chronic invalid. They produced endometritis, which sometimes spread to the Fallopian tube, and thus pyosalpinx resulted. We do not know how often, for those who used them never fully published their results. It has been said that these ill consequences came from badly-fitting instruments, and that it is essential that the stem should not be long enough to touch the fundus uteri. This theory does not cover all the cases, but the precept is sound. It has also been said that these things happened in pre-antiseptic times; but that with antiseptics intra-uterine stems are safe. Doubtless stems caused

peritonitis by acting as a vehicle for microbes and by keeping open a way for them. But it does not follow that antiseptics can be relied upon to prevent this. You may rely upon antiseptic precautions during an operation which lasts only a comparatively short time, and every detail of which is under your own control; but you cannot rely upon a patient's faultless observance of antiseptic rules throughout the periods of weeks or months during which she will have to wear the stem if it is to do permanent good. Therefore I think stems still have much of their ancient danger. We know not how long the stem must be worn to cure the patient. I know of no evidence that straightening the uterus with an intra-uterine stem cures the patient any more quickly than keeping it anteverted with a vaginal pessary. All the time the patient is wearing the stem she must be under close medical supervision, that at the earliest sign of any ill effect—pain, hæmorrhage, discharge, or fever—the instrument may be removed. Without such close supervision she is in continual danger. For these reasons I advise against the use of these instruments. Stems have been made of different construction—with divergent springs, flexible stems of coiled wire, of indiarubber—but these have all the disadvantages described above, and others besides.

2. **Vaginal fixation.***—The object of this operation is to make retroflexion into anteflexion by sewing the anterior surface of the uterine body to the peritoneum or to the cellular tissue in front of the cervix. There are many small modifications of the direction and extent of the incision, and of the mode of stitching. I describe the operation as I have done it.

Indications for vaginal fixation.—In cases in which there is little or no prolapse, the uterus is retroflexed, and its body is so tender that the pressure of pessaries cannot be borne, and does not rectify the position of the uterus, and the symptoms are such as to destroy the comfort of the patient, vaginal fixation will give relief. In cases of this kind there is often sterility, dysmenorrhœa, not improved by dilatation of the cervix, and great dyspareunia. This opera-

* *See* Schücking, "Cent. fur Gyn.," 1891. Dührssen, "Zeit. f. Geb. und Gyn.," Bd. xxiv. Mackenrodt, *ibid.*

tion often improves the dysmenorrhœa, and removes the dyspareunia, and by this latter effect sometimes cures sterility. It removes also the sacral aching of which such patients complain. There are cases of retroflexion occurring in sterile women in which there is no symptom except dyspareunia, which lapse of time makes worse rather than better. Whether the uterus or the ovaries, which by the displacement are allowed to come lower down, be the sensitive part, I know not; but, I think the latter, for I have found this symptom when the displacement of the uterus was very slight. These cases can be cured by vaginal fixation of the uterus. Some recommend this operation for retroflexion with slight cystocele. They say that fastening the body of the uterus in anteversion throws the cervix back, stretches the anterior vaginal wall, and thus removes cystocele. I have not tried it in any such case.

Comparison with other surgical measures.—Vaginal fixation makes a lasting alteration in the position of the uterus, which stem pessaries never do. It leaves no scar in the abdominal wall, and therefore no liability to hernia, in which it has the advantage over Alexander's operation and ventral fixation. It is easy, and, done with clean fingers and instruments, the risk is almost *nil*; not so great as that of childbirth. An objection to it is, that it may cause difficulty in labour should the patient afterwards become pregnant; that if too high a part of the uterine wall be attached to the vagina, this will be unable to rise during labour, and therefore the first stage will be delayed. But many cases of childbirth after this operation have been reported in which labour was normal. In some cases in which difficulty has been thought to be due to this operation, it has seemed to me, on reading the report, that the cause of the difficulty was the haste with which the attendant concluded that there must be difficulty, and that he must interfere. The objection is certainly important, it needs further investigation, and it compels me to think that in most cases ventral fixation is preferable. I have found that a uterus sewn by vaginal fixation into a position of anteversion became, in the course of years, less anteverted. I doubt, therefore, whether the change in position is permanent: another reason for preferring ventral fixation.

How vaginal fixation is done.—You need one assistant, besides the anæsthetist, and the following instruments:—

Clover's crutch.
Two volsellæ.
Scalpel.
Toothed dissecting forceps.
Hook.
Blunt-pointed scissors.
Half-curved perineum needle in handle.
No. 4 China twist.
Macintoshes, sponges, sponge-holders, vaginal douche.

Put the patient in the lithotomy position. If there is enough hair on the labia to be in the way, clip it close or shave the labia. Grasp the cervix with a volsella, and pull it down to the vulva. It is well, if the os externum be large enough, to apply a volsella to each lip; and hold it by the anterior. Then if this should get loose, the other can be pulled upon. The upper part of the vagina will be inverted and pulled down with the uterus; the bladder will be in relation with the part which is not inverted. For greater safety define its position with the sound. Cut with a scalpel in the middle line, beginning where the inversion of the vagina begins, and cutting quite down to the insertion of the vagina into the cervix uteri. You will thus open the utero-vesical cellular tissue, but unless you extend the incision beyond the line of inversion of the vagina, you will not wound the bladder. Cut through the cellular tissue to the uterus. Then with the fingers separate the bladder from the uterus upwards and at the sides. This done, you will feel the thin sheet of vesico-uterine peritoneum before your finger. Grasp this with forceps, pull it down, and open it close to the uterus with blunt-pointed scissors. When you have made a small opening, push first one finger, then two, through the hole, and thus tear through the peritoneum until the opening allows room for the wide separation of two fingers. You will now be able to feel the uterus and its appendages. Place one

or two fingers of the left hand in front of the uterus, to keep bladder and bowel out of the way. Take a half-curved needle on a handle, threaded with No. 4 china twist, and pass the needle, guided and guarded by the fingers of the left hand from side to side through the anterior uterine wall, just above the os internum. When the eye of the needle has emerged so that you can see it, seize the loop with a hook, pull one end through, and withdraw the needle. You have now a ligature passing through the uterus. Hold the uterus down by this, and pass, in the same way, a second stitch, about a third of an inch nearer the fundus. Hold the uterus in position by this, and pass a third, still nearer the fundus. The next step is to secure these stitches to the vagina. Pass a needle in a handle through the vaginal mucous membrane and underlying fibrous and cellular tissue, entering it through the mucous membrane close to the incision, at a point corresponding to the stitch nearest the internal os, and taking up a good bundle of cellular tissue. When the eye of the needle is visible, thread it with the corresponding end of the uterine stitch, and withdraw it. Repeat this on the opposite side. Bring the other two uterine stitches in the same way through the vagina. When this has been done, the three stitches hold the anterior serous covering of the uterus applied to the cut surface of vaginal fibro-cellular and muscular tissue (Fig. 64). Clean the raw surfaces, and then tie the stitches. Leave the ends an inch or two long, so that at the end of a week you can remove them. You may use catgut sutures, cut them short, and leave them to be absorbed; but thick catgut is absorbed slowly, and thin catgut may break.

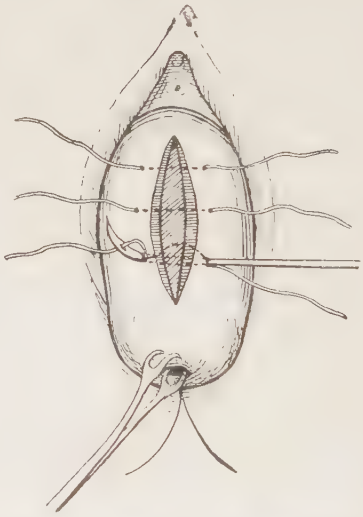


Fig. 64.—Vaginal fixation; stitches in position before tying.

3. **Alexander's operation.**—This is shortening the round

ligaments, and thus pulling the body of the uterus upwards and forwards. This operation permanently cures retroflexion of the uterus; but it does not cure prolapse. If cystocele is associated with retroflexion, your patient will not be cured. But in those rare cases in which without appreciable prolapse the body of the uterus is sharply bent back, is painful and tender, and a pessary fails to relieve, I think that Alexander's operation is a means from which, if successful, we can promise a lasting result.

The great objection to Alexander's operation is its risk: the danger to life and the danger of a long illness, with suppuration of the wounds. The dangers come, in the first place, from the difficulty of the operation. You ought not to do it without practising it on the dead subject often enough to make you sure of finding the ligaments. In many cases operators have failed to find the ligaments, and in some fatal injury has been inflicted in the search. Second, pulling up the round ligaments involves detaching them deep down over a large part of their surface, from the cellular tissue in which they lie, and from which in part they are supplied with blood. This detachment, together with the tension that is put upon them, seems to lower their resisting power, and make them liable to inflammation. This inflammation may lead to deep suppuration, which may spread to the peritoneum, and thus fatal peritonitis follow a week or so after the operation. This may happen although the operation wound is perfectly healed and the ligament firm in its new situation. The inflammation may spread along the ligament to the surface, and the pus escape by the operation wounds, which then do not heal; the ligaments, after the sutures are removed or absorbed, slip back into their old place; the operation is a failure; the wounds heal by granulation from the bottom, with profuse suppuration; and the patient has a febrile illness of several weeks' duration. The net result is thus a long illness and no benefit.

If these results are frequent, they should prevent the operation. The operation has been but little performed in England, and I know of no operator except Dr. Alexander who has performed it often enough to make his experience representative of the average results in the hands of a

competent operator. Dr. Alexander's experience shows that bad results are, in such hands, infrequent. It has been done more largely in America than in England, and the statements of American writers would lead one to think that many unpublished disastrous cases have occurred. There is yet another disadvantage attending Alexander's operation, viz. that the inguinal canals cannot be wholly or partly opened up without favouring hernia.

Alexander's operation has to be compared with ventral fixation, for the only cases in which it is beneficial are those in which the same benefit can be attained by ventral fixation: an easier and safer operation. Alexander's operation does not affect subsequent labour; herein it is possibly superior to ventral fixation, but I have given reasons for doubting the importance of this consideration. At present, in cases of retroflexion, causing symptoms, and not relieved by pessaries, I advise ventral fixation rather than Alexander's operation. But I claim not finality for my opinion, and therefore I proceed to describe Alexander's operation.

Method of performing Alexander's operation.—In this, as in many operations, different operators have modified trifling details. I describe what I think the best way of doing it. One assistant is required, besides the anæsthetist, and the following instruments:—

Scalpel.
Dissecting forceps.
Two Wells's pressure forceps.
Half-curved needle; aneurysm needle.
Wells's needle-holder.
No. 1 catgut.
Scissors.
Sponges, razor, iodoform, Gamgee tissue.

Shave the pubes. Feel the spine of the pubes, and cut parallel with Poupart's ligament from the spine to about an inch or two above and outside it, the length of the cut depending on the fatness of the patient; in fat patients you need a longer incision. Divide the cellular tissue until you have exposed the glistening aponeurosis of the external oblique. Secure any bleeding points with pressure forceps.

You will see the fibres of the aponeurosis diverging to form the external ring. Now carefully open up the inguinal canal by cutting through the aponeurosis parallel with the skin incision for about an inch. Some reddish tissue mixed with fat will bulge. This is the end of the ligament. Pass an aneurysm needle from below upwards underneath the outer part of this mass, hook it up, and with finger and thumb feel for the ligament in the tissues outside the aneurysm needle. Having felt this, strip off with the finger and thumb or the handle of the scalpel, and the edge, if necessary, the fat and cellular tissue which surround it. As soon as this has been completely done, the ligament can be pulled out easily, as a white cord as thick as a No. 8 bougie. The identification and freeing from the surrounding tissues of the ligament is the difficult part of the operation. Pull the ligament up until you judge that the uterus has been raised enough. Then with catgut stitch it into the inguinal canal, passing each stitch first through the skin and subcutaneous fat, then through the tendinous margin of the exposed inguinal canal, next through the round ligament, then through the opposite wall of the inguinal canal, and bring it out through the skin. Put in stitches about a quarter of an inch apart, and thus stitch the ligament into the whole length of the inguinal canal, that it may fill and close it Then cut off the redundant end of the ligament. Close with sutures the rest of the skin wound. Do the same thing on the opposite side. Powder well with iodoform, and apply Gamgee tissue. Some insert a Hodge's pessary, to be worn for two or three weeks after the operation; this is harmless, and a good precaution. Some put in an intra-uterine stem; this is unnecessary, and adds to the risk. Let the patient have a pillow to support her knees in a flexed position, to lessen strain on the stitches. She should keep her bed for three weeks after the operation, by which time the wounds ought to be healed.

4. **Ventral fixation.**—In retroflexion with descent, in which pessaries fail, ventral fixation is the only treatment that will cure. I have described it in the preceding chapter. In retroflexion its immediate result is satisfactory, but it may not be permanent; and an incisional hernia may develop.

But there is in my judgment sufficient prospect of benefit lasting a long time to make this operation worth doing in patients whose uterine displacement makes them chronic invalids. I have known patients who have been invalids for years made able to lead active lives by this operation.

5. **Adherent retroflexion.**—Sometimes the uterus is fixed by peritoneal adhesions in a position of retroflexion. There are two classes of such cases (*a*) those in which there are also fixed inflammatory lumps at the side of the uterus, and (*b*) those in which there are no such lumps, but by bimanual examination (which on account of tenderness will often need anæsthesia) you find only thickening of pelvic peritoneum without appreciable, or with only slight, enlargement, of the uterine appendages.

In the first class (*a*) the inflammatory lumps are more important than the uterine displacement, and therefore dominate treatment. Pelvic inflammations will be described in subsequent chapters. In the second class (*b*) the displacement may cause persistent pain and tenderness, which can be cured by ventral fixation. If there be only chronic thickening, there is no collection of pus or active inflammation, only adhesions behind the uterus. Adhesions of the vesico-uterine peritoneum are rare, first, because inflammatory exudation gravitates towards Douglas's pouch; second, because the alternate filling and emptying of the bladder prevents the peritoneum in relation with it from getting fixed. When the abdomen has been opened with the fingers, you can break down adhesions between the uterus, ovaries, tubes, and adjacent peritoneum. If there is much thickening of a tube it can be removed. I have known chronic pain and tenderness, described by the patient as severe, removed by this operation. But the breaking-down of adhesions adds risk to the operation; therefore advise it not without making sure that the patient suffers much, and that there is no other cause for her suffering, or without explaining to her that the operation is attended with danger.

Liberation of the uterus without opening the peritoneum.—It has been advised to break down adhesions in these cases by pushing up the vagina, under anæsthesia, the uterine body without opening the peritoneum. I think

this bad practice. In the cases (*a*) in which there are inflammatory lumps such pressure, if effective, so that adhesions are really broken down, may cause fatal hæmorrhage (as in a case reported by R. Barnes*) or peritonitis from bursting of pus cavities. If there be merely thickening I do not believe it possible by such pressure to break down adhesions. By pressure the thickened peritoneum may be pushed up, carrying the uterus with it, but cannot be separated from the uterus.

Other pathological displacements.—Schultze has written a large book on displacements, which has been translated into English. In it the effects of inflammation of the peritoneum and cellular tissue in pulling and fixing the uterus in different positions are laboriously described. It is true, as I have just pointed out, that if the uterus be fixed in a position of retroflexion, the patient may have pelvic pain which she would not have had were it not for the fixation of the uterus in an unnatural position. If the wall of the uterus be thinned by atrophy, as from old age or some wasting disease, and fixed with its body bent back, its canal may at the bend be obstructed, and pus or mucus be retained in the uterine cavity. † But when the uterus is healthy and its wall of normal thickness, retention of blood from retroflexion is unknown as a fact, although theorists have imagined its occurrence. In these two ways fixation of the uterus in a position of retroflexion is important.

Schultze has elaborately described how inflammation around the uterus may lead to anteflexion, anteversion, or to pulling of the uterus to either side of the pelvis. These changes, being a result of disease, are correctly called pathological, but they are unimportant. The patients in whom they occur are, or have been, ill; but they are ill because they have inflammation, not because the uterus is pulled this way or that.

* "Obst. Trans.," vol. xx.

† I have elsewhere collected instances of this. *See* "Obst. Trans.," vol. xxiv. p. 168.

CHAPTER XII.

CONDITIONS RESEMBLING PROLAPSE.

THERE are certain conditions in which the patient complains of something coming down or protruding at the vulva, and the appearance of the parts is like that of prolapse; but prolapse, if present, is not the primary condition. These conditions are, elongation of the vaginal portion of the cervix and certain tumours of the vagina.

Infra-vaginal hypertrophy of cervix.—This means that the vaginal portion of the cervix is longer than it should be. It may be two inches long, or even more. In other respects than its length it is healthy. This condition is a congenital malformation. I have seen it in two sisters. It is usually met with in virgins. We know nothing of its cause.

Symptoms.—It attracts attention usually by causing prolapse. The healthy uterus is set at right angles to the vagina, and hence when it is driven down it presses against the posterior vaginal wall, and does not slip down the vaginal canal and invert the vagina. But if the vaginal portion be two inches long, it cannot lie at right angles to the canal, but lies in it, parallel to its walls. Then pressure from above drives it down along the vagina, inverting the upper part of the vagina as it goes (Fig. 65). There is nothing to oppose its progress, and hence little by little it descends farther and farther, the structures which should retain it in position getting more and more stretched, until it protrudes at the vulva, and the patient goes to a doctor because her "womb comes down."

The symptoms are chiefly those of prolapse: dragging, bearing-down pain, relieved by lying down. But the displacement of the parts hinders the return of blood, and hence there is some congestion of the uterus, leading to increased menstrual flow and menstrual pain. The lengthened vaginal portion plays the part of a foreign body in the vagina, and

by its pressure and friction leads to leucorrhœa. This leucorrhœa is also partly due to inflammation of the cervix, which is frequently present. If such a patient should marry, there will probably be dyspareunia. Barnes* thinks it a

Fig. 65.—Hypertrophy of infra-vaginal cervix; note that when pushed up as far as possible the vaginal portion still occupies the vagina.

cause of sterility, and so it may sometimes be, by hindering proper intercourse, but there is no evidence of its producing sterility in any other way.

Diagnosis.—You find a protrusion at the vulva. Push this up, so as to extend the vagina as much as possible. When you have done this, you find that there still protrudes into the upper part of the vagina a length of cervix which no upward pressure will diminish; but that, except as to length, it is healthy.

Treatment.—This is simple: to cut off the redundant part in such a way as to prevent stenosis of the cervical canal. The old practice was to put a galvanic écraseur wire round the cervix, which being heated burned its way through the

* "Diseases of Women," p. 113, 1st edition.

cervix. This method protected the patient from sepsis, but led to stenosis. The better practice is to use knife or scissors and sutures.

Operation.—Instruments required :—

Clover's crutch.
Two volsellæ.
Scissors.
Scalpel.
Half-curved needles.
Needle-holder (Fig. 66).
No. 2 catgut.
Sponges, douche tin, etc.

Put the patient in the lithotomy position. Pull the cervix down to the vulva, so that the redundant part

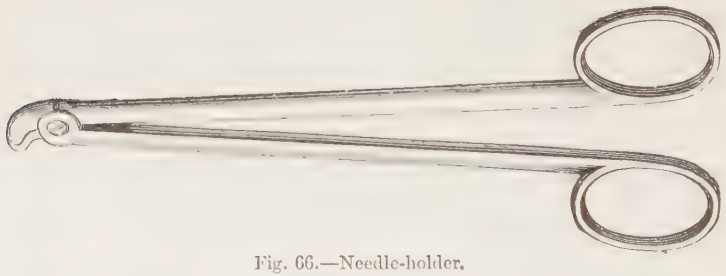


Fig. 66.—Needle-holder.

may be outside it. Ascertain the insertion of the vagina in front and behind by picking up the mucous membrane with forceps, and noting the level above which you can move it freely from the cervix. Below this make a superficial circular cut round the cervix, to be a guide to the level at which it is to be cut off. Now split the cervix on each side up to this line. Seize each lip with a separate volsella. Cut off the anterior lip by transverse cuts, such as to make the cut surface gutter-shaped. The cut surface will bleed freely. Stop the bleeding by putting stitches from within the cervical canal through the cervix and the external mucous membrane, thus bringing the sides of the gutter close together, and compressing the tissues between. Enough stitches will soon stop bleeding.

Leave the ends of the ligatures long, that you may hold the cervix by them. Having done this, cut off the posterior lip by similar transverse incisions, and stop bleeding in the same way, by stitching the mucous membrane of the canal to that outside. When all bleeding is securely stopped, cut the ligatures short, and push back the cervix (Fig. 67). By this method you surely prevent stenosis. The aspect of the cervix afterwards is not normal, for the furrows of the stitches remain; but as the part is not visible, this is unimportant. Keep the patient in bed for a fortnight afterwards, that the pelvic floor may recover its tone. When she gets up, if the enlargement of the cervix has been the only morbid condition, the symptoms will have vanished, and will not return.

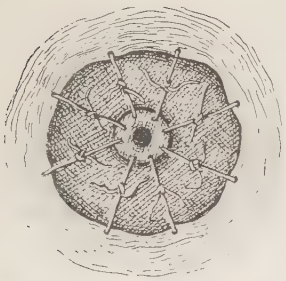


Fig. 67. — Diagram of cervix stitched as described in text. (*After Auvard.*)

Hæmorrhage may be prevented by transfixing the cervix with a harelip pin above the level at which you intend to cut it off, and surrounding the cervix with an elastic ligature above the pin. But this requires the uterus to be dragged farther down than would otherwise be needed, thus further straining its supporting structures; and the bleeding without this precaution is not formidable.

VAGINAL CYSTS.

How found out.—Cysts of the vagina, when small, give no trouble, and are not found out until the patient is examined for some reason not connected with the presence of the cyst. When they get larger, they provoke dragging and bearing-down sensations, and sometimes protrude at the vulva, so that the patient notices it, and thinks that her "womb is coming down." This is the usual way in which they attract attention. The next most common way in which a vaginal cyst is discovered is by its obstructing coitus. A large cyst has been known to press on the urethra, and cause pain and difficulty in micturition, and even to obstruct the delivery of a child; but cysts large

enough to do this are very rare. Occasionally vaginal cysts become inflamed; they then are painful and tender, and may cause discharge of pus, which may be streaked with blood.*

Seat and characters.—Vaginal cysts occur chiefly in the lower part of the canal. They are generally single, occasionally multiple. They are slightly more frequent on the anterior than on the posterior wall. The wall of the cyst is sometimes thick and sometimes thin; hence they have been grouped into "submucous," "interstitial," and "perivaginal" cysts, and into superficial and deep cysts. But no sharp line can be drawn between these groups, and these adjectives help us not in diagnosis or treatment. Vaginal cysts are generally round or oval in shape, the long axis of the oval corresponding to that of the vagina. They begin to cause trouble when they reach the size of a Tangerine orange. Their enlargement much beyond this size is usually prevented by treatment. The largest vaginal cyst on record was the size of a fœtal head. Very rarely they become pedunculated. They may do so when the cyst is large; when it is exposed to pressure from above, as in the case of prolapse; and when the tissue at its base is lax. When thin-walled they are smooth outside. They may contain serous, that is clear, limpid, yellow fluid; or viscid, tenacious fluid; and either kind of fluid may be coloured by the effusion of blood into it, or made turbid with epithelium. Cysts containing fat (and therefore obviously dermoid) have been recorded.

Clinical history.—As vaginal cysts are seldom found out while small, we know not how fast they grow; probably very slowly. They occur at all ages, but, as would be expected of a slowly-forming thing, they are more frequent in middle life; that is, in the later years of sexual activity. It is believed, on *à priori* grounds, that they grow faster during pregnancy.

Origin of vaginal cysts.—Vaginal cysts are so rare that their development has not been traced. We know only in a few cases how they are formed. The opinions held as to their origin are the following:

1. **Glandular retention cysts.**—It is thought that they

* The best account of these cysts is that given by Rutherfoord, "Obst. Trans.," vol. xxxiii. See also Cullen, "Bulletin of the Johns Hopkins Hospital," vol. xvi., No. 171, 1905.

may be formed out of vaginal glands by the opening of the gland being stopped up and its secretion retained. This view is not accepted by all; some have failed to find glands in the vagina; they say that what have been described as glands either are not true glands or are pathological. Gland structures have been found in the vagina; whether they are true glands or not is a question of verbal definition. I think that this is the most probable origin of thin-walled vaginal cysts.

2. **The bursal theory.**—According to this theory—invented to account for cysts in which no epithelial lining was found—vaginal cysts may be formed by serous effusion taking place into the connective tissue as a result of friction; the cyst thus being a sort of bursa. I can imagine no circumstances in which the vagina can be subject to pressure or friction at all comparable in degree or duration to that suffered by the external points over which bursæ form.

3. **The ecchymosis theory.**—According to this, vaginal cysts result from hæmorrhages into the connective tissue during labour. There is no explanation why blood should now and then leave a space into which more and more fluid is gradually poured out. But this theory differs from the former in that there is no doubt about its postulate, viz., that in labour hæmorrhage sometimes does take place into the connective tissue of the vagina.

4. **The lymphatic theory,** viz., that vaginal cysts are dilated lymph channels. This notion is based on the fact that within some vaginal cysts endothelium has been found like that lining lymphatic vessels. If it be correct, someone ought to meet with lymph vessels in the vagina, varicose, yet not big enough to assume the globular shape of a cyst. I have neither seen nor read of such lymphatics in the vagina.

5. **Accidental inclusion of mucosa.**—Cullen has often found small cysts low down in the posterior vaginal wall after an operation had been done to repair a ruptured perineum. He thinks such cysts are produced by the inclusion of a detached bit of mucosa between the united surfaces.

6. **Dilatation of Gärtner's duct.**—There is no doubt that some vaginal cysts are of this nature. Gärtner's duct is a Wolffian duct which remains after growth is complete (Fig. 68).

It often persists in cows and pigs, and occasionally in women.* Skene† has published a case of a patent Gärtner's duct opening into the urethra. When it persists in women it

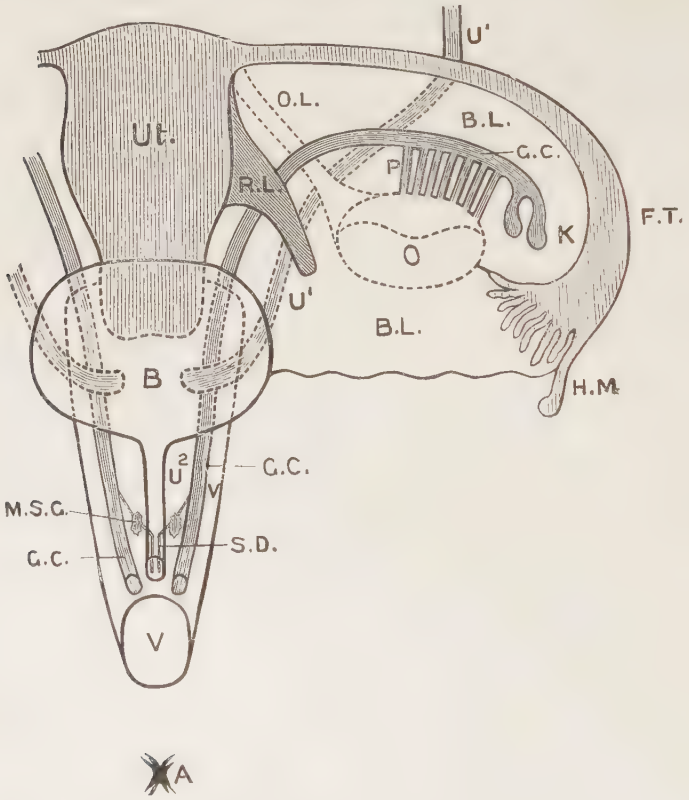


Fig. 68.—Diagram showing fœtal structures out of which cysts may develop. (*After A. Routh.*)

UT, Uterus; A, Anus; V, Vagina; B, Bladder; F T, Fallopian tube; U^1, Ureter; U^2, Urethra; O, Ovary; O L, Ovarian ligament; K, Kobelt's tubules; G C, Gärtner's duct; M S G, Max Schüller's glands; S D, Skene's ducts; P, Vertical tubes of parovarium; R L, Round ligament; B L, Broad ligament; H M. Hydatid of Morgagni.

begins as the horizontal tube of the parovarium (the remains of the Wolffian body), runs in the broad ligament to the uterus, and then either by the side of or in the wall of the uterus down to and then along the vagina. Some think that

* *See* Routh, "Obst. Trans.," vol. xxxvi.

† *Medical Record*, May 16th, 1896.

Schüller's glands, at the lower part of the urethra, are the terminations of these ducts. Berry Hart holds that the hymen is developed from these ducts.* In animals multiple vaginal cysts have been seen so arranged as to leave no doubt of their formation from Gärtner's duct. In a woman a vaginal cyst has been observed continuous with one in the broad ligament; a condition hardly otherwise explicable than by formation of the cyst out of Gärtner's duct. Vaginal cysts have been observed containing fluid like that of parovarian cysts. I therefore think that this mode of origin of some cysts on the anterior vaginal wall cannot be disputed. Cysts on the posterior wall cannot be thus explained; and as these are nearly as numerous as those on the anterior

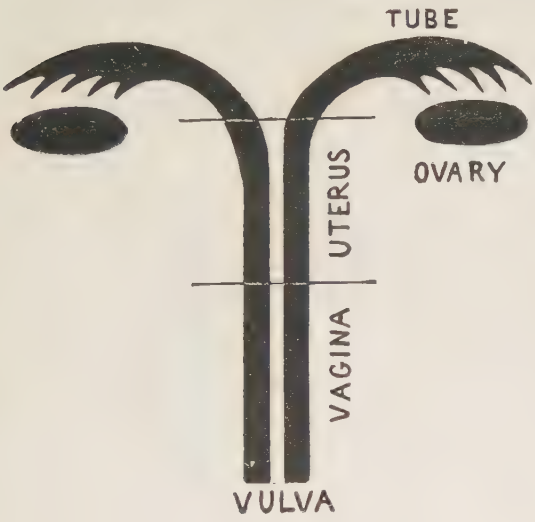


Fig. 69.—Diagram showing ducts of Müller. (*After Auvard.*)

Fig. 70.—Diagram showing formation of uterus and vagina by fusion of ducts of Müller. (*After Auvard.*)

* "Edinb. Obst. Trans.," 1895-6.

it is probable that most vaginal cysts have other modes of origin.

7. **Closure of one half of a double vagina.**—The normal uterus and vagina are formed by the fusion of the two ducts of Müller (Figs. 69, 70). This fusion may be incomplete; one duct of Müller being developed into a normal vagina and uterus, while the other is imperfectly developed so that the vagina forms a closed cavity. If on the side of the closure the uterus is developed it menstruates into the closed vagina, so that this becomes full of blood: *unilateral hæmatocolpos* (Fig. 71). Such a cavity is thick-walled and at the side of the vagina, but more in front of it than behind; I presume because the cellular tissue is looser in front of the vagina than behind it.

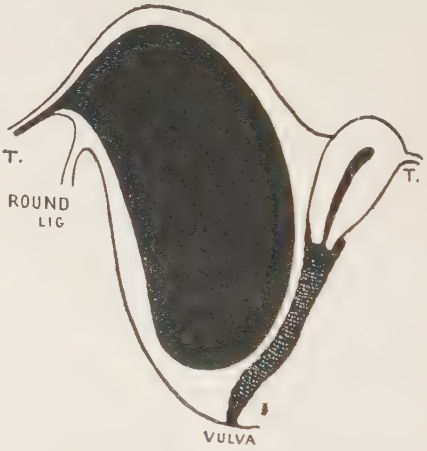


Fig. 71. Unilateral hæmatocolpos. (*After A. Martin.*)

When the cyst is opened, treacly blood flows out, and after the cavity has been emptied the cervix uteri can be felt at the top of it. These features make clear its nature.* It is reasonable to think that faulty development of Müller's duct may exist, in which the uterus on the defective side has not developed, but the vagina exists as a closed cavity. As no menstruation takes place into such a cavity its contents will not be blood, but either mucous fluid or pus. The only reason for supposing that such cysts are formed out of Müller's ducts is their resemblance to the cavity of a closed vagina into which a cervix opens. Given a single thick-walled cyst in front of the vagina, into which no cervix uteri opens, it is probable that it is a dilatation either of Gärtner's or of Müller's duct;

* For cases *see* Cullingworth, "American Gynecological Transactions," vol. xviii., 1893

but I know no test by which to judge out of which fœtal relic such a cyst has been formed.

Symptoms and diagnosis.—Vaginal cysts by their bulk may cause bearing-down sensations, or they may obstruct coitus, micturition, or delivery. If inflamed, they may cause aching or throbbing pain in the pelvis, and tenderness on contact, the latter symptom being manifested during sexual intercourse. The presence of a vaginal cyst is found out by local examination, and in no other way.

The cyst may bulge at the vaginal orifice. If it be on the anterior wall, it may look like a cystocele. Distinguish between the two by putting a uterine sound into the bladder, and turning its concavity backwards. If the swelling be a cystocele, you will feel the point of the sound immediately under the most prominent part of the swelling. If it be a cyst, movement of the sound will show the shape and position of the bladder and urethra to be normal, and the finger in the vagina will perceive the elastic rotundity of the cyst like a cushion interposed between the finger and the sound in the urethra. If the projection is from the posterior vaginal wall, it will resemble a rectocele. Put a forefinger in the rectum, and the other in the vagina. If the swelling be a rectocele, the rectal finger will enter it. If a cyst, it will be felt between the two fingers.

A vaginal cyst too high up to protrude at the vulva is not likely to be taken for prolapse. When such a tumour is felt the question will be, Is it a cyst or a solid tumour, a sarcoma or fibroid? A fibroid is so hard that it can scarcely be taken for a cyst. A sarcoma may be elastic, but is deep red, purple, black, or greenish in colour (from its vascularity and hæmorrhages into its substance). A cyst is either of the same tint as the rest of the vagina, or, if its wall be thin, of a translucent greyish pink. A urethral diverticulum might be taken for a cyst of the anterior vaginal wall, but if you pass a uterine sound along the urethra, its point will enter a urethral sac. These latter swellings are associated with urinary symptoms, which will direct attention to the urinary canal. They will be described in a subsequent chapter.

The treatment of vaginal cysts.—This is simple.

Pedunculated cysts have been described, though I have never seen one. Such a cyst should be removed by transfixing and tying its stalk, and then cutting the cyst away. When the cyst is sessile, cut away the free part of the cyst, and stitch to the vagina around it the part of the cyst wall which remains attached (Fig. 72). The pressure of the stitches will stop bleeding. In time the exposed part of the cyst will come to resemble the rest of the vaginal mucous membrane. It is difficult to dissect out these cysts, and unnecessary.

Fig. 72.—Mode of stitching after removal of free part of vaginal cyst.

FIBROIDS OF THE VAGINA.

These tumours are so rare that no one can describe them from adequate personal experience. An account of them must be based on collections of cases in books.§ They are commoner on the anterior than on the posterior vaginal wall. They may be pedunculated, but are more often sessile, because they are not, as in the uterus, surrounded by muscular tissue powerful enough to force them out of their bed and towards the surface. Most are small, but Simpson* has reported one as big as two fists, and Hastenpflug † one which filled the pelvis, lifted up the uterus, and reached to within a hand's breadth of the umbilicus. They may become œdematous, or ulcerated, or gangrenous; the latter event had begun in Hastenpflug's case. They are composed mainly of white fibrous tissue, with a few unstriped muscular fibres. A vaginal fibroid may pull down the vagina and cause prolapse, as in a specimen in the London Hospital museum ‡ (Fig. 73). This prolapse differs from the ordinary form in that the bladder and urethra do not descend, as they do when prolapse is caused by pressure from above.

* "Contributions to Obstetrics and Gynæcology," p. 201. A list of reported cases accompanies Simpson's paper,

† Quoted by Pozzi. I have not seen the original.

‡ 2130. § *See* John Phillips, *Brit. Med. Journal*, Feb. 4, 1899.

Symptoms.—Fibroids of the vagina generally occur in middle life. They usually cause bearing-down and a protrusion from the vagina. The protrusion is either the fibroid itself or a slight descent of the vagina caused by the bearing-down

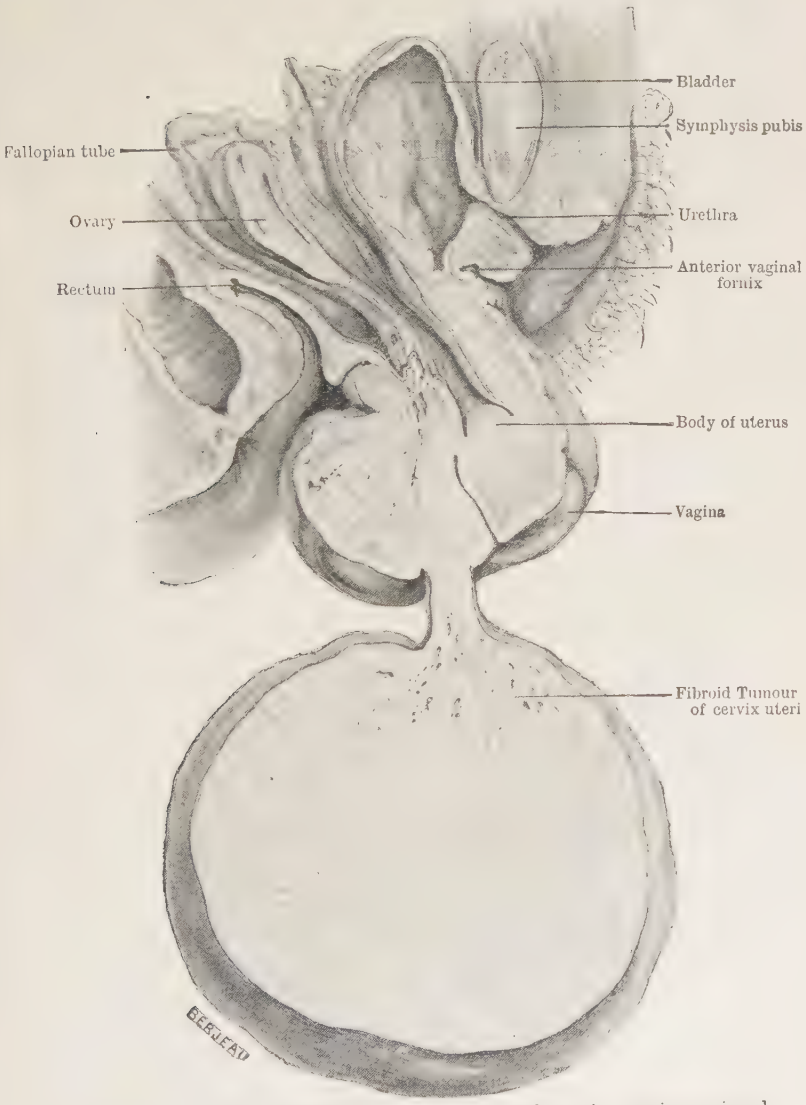


Fig. 73. Uterus dragged down by a tumour growing from the cervix uteri and adjoining part of vagina. (*From a specimen in the London Hospital Museum.*)

efforts which the fibroid produces. If large enough, a vaginal fibroid may interfere with micturition, with sexual intercourse, or with delivery. They have been said to cause leucorrhœa and hæmorrhage, but I see not how. I should take the association of bleeding with a vaginal fibroid as a coincidence.

Diagnosis.—This is easy, unless the fibroid has undergone degeneration. The fibroid is recognised by its hardness, roundness, and distinctly circumscribed shape. It cannot be distinguished from sarcoma until it has been removed and examined with the microscope. Sarcoma may be suspected if the tumour has grown quickly, and is dark in colour from vascularity and ecchymosis. Sarcomata used to be called "recurrent fibroids." If very œdematous, a fibroid might be taken for a cyst, an error removed as soon as the swelling is cut into. If ulcerated, it might be thought cancerous; but as the growth is circumscribed, its removal would be clearly indicated, and in removal its nature would be ascertained. In the case of a large tumour, there might be at first difficulty in distinguishing it from a uterine polypus that had become adherent to the vagina, but the question would soon be settled by breaking down the adhesions. A subperitoneal fibroid might so grow outwards from the uterus as to displace, and lie in close relation to, the vagina. Here the uterine origin of the growth would be ascertained by its continuity with the uterus and its moving with that organ.

Treatment.—The treatment of vaginal fibroids is to remove them. Define the uterus; define also the position of the urethra and bladder so that you may be certain of the relations of the tumour. Cut through the mucous membrane over the most prominent part of the tumour along its whole length, so as to lay open its capsule. Then seize the tumour with a strong volsella, and, aided by a blunt instrument to break down its attachments, drag the tumour out of its bed. The operation is generally easy because the tumour is accessible. Should the tumour be so large that it is difficult to get it through the vaginal orifice, cut it into pieces with scissors. Great hæmorrhage in the removal of such tumours is rare. If it occur, secure bleeding points with forceps, and stop oozing by plugging the cavity with iodoform gauze.

Part III.

PELVIC INFLAMMATIONS.

CHAPTER XIII.

ACUTE GENERAL PERITONITIS.

Common causes of peritonitis.—The causes of general peritonitis are numerous, and are not limited to the pelvis. My business here is only with peritonitis which starts from the pelvis, or may be thought to do so. Peritonitis may arise from a wound, from hernia, from rupture of a viscus, from perforation of the stomach or bowel. Taking both sexes together, in nine cases out of ten peritonitis depends upon some condition of the alimentary canal or the glands opening into it. In women, the cause is disease of the genital organs in not more than one case in five.

Causes peculiar to women.—The chief causes of acute general peritonitis that are peculiar to women are the following:—(1) Acute septic infection during delivery or during an operation on the genital organs. (2) Ulceration and perforation of an inflamed Fallopian tube. (3) Escape of pus from the open end of a suppurated Fallopian tube. (4) Rupture of an ovarian dermoid, or of a suppurated ovarian cyst of any kind. (5) Gangrene of an ovarian cyst from twisting of its pedicle. (6) Degeneration and rupture of a sub-peritoneal fibroid; sloughing of a fibroid, either sub-peritoneal * or submucous.† (7) Rupture of a suppurated extra-uterine gestation sac. (8) Retroversion of the gravid uterus, causing

* *Lancet*, Dec. 8th, 1894.

† "Obst. Trans.," vol. xxxii., 1890, p. 171.

peritonitis either directly (the mode of production in this case being obscure), or indirectly, by causing retention of urine, sloughing of vesical wall, perforation of bladder, and escape of urine into the peritoneal cavity.

Symptoms of peritonitis.*—The symptoms of general peritonitis represent the reaction of the peritoneum against injury, whether mechanical violence, chemical irritants, or an invasion of microbes; and they are the same from whatever part the injury comes, whether from the pelvis or elsewhere. There is great prostration; the pulse is small, quick, and hard; the temperature is generally, but not always, raised; the expression is anxious; there is great pain in the belly, and on palpation it is held rigid, and is very tender; respiration is thoracic; there are vomiting and constipation: sometimes the belly wall is retracted; occasionally there is meteorism. The tendency to death is by asthenia.

These symptoms are liable to much variation. The nervous supply of the abdomen is such that reflex action is very prompt. The abdominal viscera and the peritoneum are supplied with nerves from the solar, cœliac, and other plexuses within the belly. To these plexuses run spinal nerves from the lower seven dorsal nerves, which supply motor nerves to the lower intercostal muscles, and to the muscles of the abdominal wall: and sensory nerves to the abdominal wall. Hence irritation of the peritoneum promptly produces, as a reflex effect, tenderness of the skin over the belly, with fixity of the abdominal muscles and lower part of chest. Hence the belly is rigid, and breathing is thoracic. As peritonitis advances, the muscular coat of the bowel becomes paralysed. At the same time, the disturbance of the circulation through the bowel modifies its secretions, and its contents decompose with evolution of gas. From these two causes there is meteorism. These symptoms are most marked when acute peritonitis comes on in previously healthy persons; when the peritoneum has been long irritated they are less marked. But this law is not absolute. In some cases there is never meteorism, and the belly is throughout retracted. We do not know all the conditions upon which it depends whether the belly is retracted or distended, whether tenderness is

* *See* Treves, "Peritonitis." London, 1894.

great or slight. The pain is at first general, and if the peritonitis is general the tenderness is over the whole abdomen. If the patient survive, it becomes more and more local, for at places remote from the spot where poison was introduced the phagocytes are able to devour it, while they cannot cope with it at a place where it is in great quantity, and perhaps fresh supplies are pouring in.

Any irritant to the peritoneum produces great prostration, and if the irritant be severe enough, the patient may die before peritonitis has been set up. In rupture of extra-uterine gestation with bleeding into the peritoneum, and in rupture of the uterus, there is greater shock than is produced by bleeding of the same amount taking place externally. Urine and fæces are not septic; they do not poison wounds, but they are highly irritating to the peritoneum. Boiling water (a sterile fluid) has been injected into the peritoneum of animals. I have read in the "Transactions of the Royal Society" of cases more than a century ago in which a zealous therapeutist tried to cure ascites by injecting tincture of iodine (an antiseptic fluid) into the peritoneum. The result in these cases was death from shock.

Vomiting is almost always present. Sometimes the patient brings up only a little fluid; sometimes green stuff in such abundance that there is evidently regurgitation from the bowel. Although vomiting is so constant a symptom, yet its amount and frequency are not important for diagnosis or prognosis. There is no definite relation between meteorism and vomiting. It has been said that the great pathological fact in peritonitis is poisoning; that the poison is in the bowel, and regurgitates into the stomach; that it is absorbed through the liver into the blood; that therefore the indication in treatment is to remove this poison by purging and washing out the stomach. There is no doubt that in slight cases some relief follows either of these measures. In most cases nothing will make the bowels act; in some there is diarrhœa. Vomiting is less, and the prognosis is rather better when there is diarrhœa.

The temperature is usually raised, but some cases run their whole course without any elevation of temperature. The pulse is always quick and small; this is a more constant feature than

fever. The tendency to death is by asthenia; the pulse getting quicker and smaller; the extremities cold; the face anxious and pinched. The mental faculties are clear to the last.

Diagnosis between hæmorrhage and peritonitis.—The chief difficulty in the diagnosis is to distinguish between intra-peritoneal hæmorrhage and peritonitis. In both there is abdominal collapse and a small, quick pulse. But in hæmorrhage the mucous membranes are blanched; in peritonitis, not. In hæmorrhage the belly is not rigid or tender; in peritonitis it is both. In hæmorrhage respiration is partly abdominal; in peritonitis it is wholly thoracic. In hæmorrhage vomiting is absent or slight; in peritonitis it is a marked and distressing symptom.

Diagnosis between peritonitis and abdominal shock.—After every operation in which the belly is opened there is some degree of shock; slight if the operation has been soon over, the peritoneum little handled, the loss of blood small; severe if the operation has been long, involving much manipulation of the peritoneum and great loss of blood. When shock is severe, it is difficult during the first day or two to distinguish between shock and peritonitis. When all the symptoms of peritonitis are well marked—rapidity of pulse, high temperature, abdominal pain, flatulent distension, persistent vomiting, haggard, pinched, and anxious face—there is little room for doubt. But, except the last, any one of these symptoms may be present without peritonitis. The temperature may rise as high as 102° after an abdominal section without peritonitis being present. If the patient has lost much blood, the pulse may be 140 or even more, and gradually diminish in frequency at the end of a week or two. Persistent vomiting may last for several days after an operation, and yet the patient get well. Abdominal pain and flatulent distension are the rule, rather than the exception, after the belly has been opened. There is no one symptom from which you can say that peritonitis is present, or the absence of which negatives peritonitis. The most constant sign is one recognisable by experience, though difficult to define, viz. the expression of the face. In peritonitis the face looks anxious, pinched, haggard. If the expression is cheerful, hopeful, contented, placid, the patient will do well.

Treatment of acute peritonitis.—There are two ways of treating peritonitis: (1) Expectant and (2) operative. The aims of the first are to relieve suffering, and to put the patient under conditions favourable to natural cure. The aim of the second is to remove the cause of the inflammation. The view is more and more becoming accepted and acted upon, that in peritonitis the only use of a physician is to advise that a surgeon be sent for. In almost every case in which peritonitis is set up by local disease, the best treatment is early operation to cure the local disease and allow the products of inflammation to escape. I cannot consider here the diagnosis of the many conditions that in men as well as women may cause peritonitis. Expectant treatment is called for when the acute stage of the attack has passed, adhesions have shut off the focus of the disease from the general peritoneal cavity, and there is no evidence of any collection of fluid that requires to be let out.

(1) **Expectant.**—(*a*) *Rest.* You will not have to insist on bed, for the patient is powerless. But see that she is relieved from even such exertions as those of lifting food or drink, and providing for the action of the bladder and bowels. Small as these efforts are, they will increase pain and exhaust strength. The patient should have everything done for her, and even passive movements should be limited as much as possible. (*b*) *Counter-irritation.* When peritonitis is slight and local, counter-irritation will lessen pain, and presumably inflammation. When the whole peritoneum is inflamed by virulent micro-organisms, it is absurd to expect much effect from reddening the skin. But gentle counter-irritation will do no harm, and such small effect as it has will be beneficial. Some think that cold to the skin lessens vascularity, not only in the skin, but also in deeper parts. (*c*) *Support strength* with food and stimulants. In the worst cases vomiting prevents the fulfilment of this indication. If the patient is sick, it is hurtful to pour fluid into the stomach, for vomiting is thus caused, which increases pain and exhausts the patient. As the tendency to death is by asthenia, alcohol, which dilates the arteries and thus makes the work of the heart easier, is clearly indicated. Support strength by enemata of beef-tea and brandy, to which some opium may be added,

e.g. peptonised beef-tea, ʒiij.; brandy, ʒj.; tr. opii, ʒjs., given every six hours. Large enemata, which will set up peristaltic action, should be avoided. (*d*) *Relieve pain* with opium, given either by the rectum or hypodermically, or in both ways. In peritonitis of genital origin, there is, as a rule, nothing important the matter with the bowel. If fæces are allowed to get big and hard, their passage past the inflamed pelvic peritoneum will cause pain. Moreover, there is some ground for thinking that by purging poisonous products may be eliminated, and thus the course of peritonitis be favourably influenced. Hence in this kind of peritonitis replace opium by laxatives as soon as you can. The best laxatives are salines in small doses at frequent intervals; *e.g.* mag. sulph., ʒj.; sodii sulph., ʒj.; tr. card. co., ʒjs.; spt. chlorof. ♏xx., aq. ad. ʒj., every two hours or less often, according to the effect produced.

By treatment on these lines you have done all that can be done to put the patient under favourable conditions, and, if modern theories be correct, the issue depends upon whether the patient's strength will outlast the intra-peritoneal battle between the morbific micro-organisms and the phagocytic leucocytes.

(2) **Operative.**—The treatment of acute peritonitis by operation is recent.* But it is the only treatment that can be called curative. Three things appear to be clearly indicated.

(*a*) **Remove cause.**—When peritonitis has been set up by the entrance of poisonous or irritating matter from a diseased part, the first object of operative treatment is either to remove or to shut off this diseased part, so that no more poison may get from it into the peritoneum. If the peritonitis has come from rupture of an ovarian cyst, a suppurated Fallopian tube, or a disintegrating fibroid, these diseased parts should be removed. If it has come from a perforation in the stomach, bowel, or bladder, the hole should be sewn up, so that no more leakage into the peritoneum can take place. These operations are sometimes very difficult, and should not be undertaken by one who has had no training or experience in abdominal surgery. Those that belong to the gynæcologist, when performed for some other reason than acute peritonitis, I shall describe elsewhere.

* *See* Lockwood, "Medico-Chirurgical Transactions," vol. lxxviii. 1895.

(*b*) **Cleanse peritoneum.**—Removal or repair of the diseased part may prevent fresh irritant or micro-organisms from getting into the peritoneum, but will not take away what have already got there. Wash or sponge out the peritoneum, so as to get rid of the irritant or the inflammatory effusion, whether serum, lymph, or pus, which is swarming with microbes. It is not safe to use in large quantity a germicide strong enough to kill the microbes, for it may kill the patient as well as the microbes. The safest thing to use is sterile saline solution.

(*c*) **Relieve obstruction.**—In peritonitis there is often obstruction of bowels, shown by copious vomiting of green or brown fluid, meteorism, and constipation. The distension of the bowels with gas is partly due to paralysis of the muscular coat of the bowel, partly to decomposition of intestinal contents brought about by disturbance of the circulation through the bowel coats. The patient is being poisoned by toxins formed in her alimentary canal. The prognosis in such cases is very bad. The extensive manipulations involved in opening the belly and searching for a cause of obstruction will almost certainly be fatal. It is better to make a small incision, stitch to its margin the piece of distended bowel that presents; then open the bowel, and put in an indiarubber drainage tube. The poisonous intestinal products can then escape, and the patient will have a chance of recovery. If she recovers, afterwards, when she is in good condition, the necessary operation for discovery and treatment of the seat of obstruction, and closure of the artificial anus can be done with a good prospect of success.

Perforative peritonitis.—The class of cases in which operative treatment is most clearly indicated are those to which this name may correctly be applied. When a patient is known to have had a chronic disease, such as an inflammatory lump in the pelvis, and general peritonitis suddenly begins, there is a probability amounting almost to a certainty that the peritonitis has started from this chronic disease. If the patient is seen soon after the general inflammation has begun, there is a fair possibility of saving life, and the operation should be done. The onset of perforative peritonitis is marked by shock. This is followed by re-action, so that at

the end of twenty-four hours the patient may think that she is very much better. If there has been escape of pus into the peritoneal cavity, this is the time at which an operation should be done. When, after symptoms of acute general peritonitis, the patient appears to improve, think not that the improvement is real, unless there is improvement not only of the general condition, but also of the local symptoms and signs: the pain, tenderness, and resistance.

Diffuse septic peritonitis.—If the inflammation of the peritoneum is part of general blood-poisoning—as, for instance, in the puerperal peritonitis which begins in the first day or two after delivery—you cannot get septic organisms out of the blood by washing the peritoneum. Here we should expect, in the present state of our knowledge, operation to be hopeless.

Infusion of saline fluid.—A mode of treatment has recently been introduced from which much is hoped. It is the injection of large quantities of saline solution into the cellular tissue. I describe what appears to me the simplest, and therefore the best, way of doing it, which is that devised by Barnard.* A saline solution is made; a teaspoonful of common salt in each pint of boiled water. The solution is put in a large jug which has been scalded out. An india-rubber tube, about four feet in length, weighted at one end, at the other carries the fluid to a glass T-piece. This is connected by two further lengths of rubber tubing to two stout brandy syringe needles. This apparatus has all been boiled. The jug is placed about a foot above the level of the patient's body; if it is at a greater height than this the injection gives pain. A syphon action is established by immersing the whole of the tubing in the jug, and then clipping the ends. Then the needles are inserted under the skin of the thighs, or under the breasts. Where the needles are to be inserted the skin should have been carefully cleansed, so as to make it if possible aseptic. Through each needle about a pint of fluid will flow into the cellular tissue per hour. In this way from fifteen to twenty pints can be introduced in twenty-four hours. But after the first seven or eight pints more should not be used without careful observation of the respiratory function,

* *Clinical Journal*, vol. xxii., 1903.

lest œdema of the lungs should be produced. The infusion can be repeated day after day as occasion demands. The indication for stopping it is that the patient is able to keep down large draughts of fluid by the mouth, or to retain large fluid enemata.

The rationale of the treatment is as follows. In this disease, owing to the vomiting and the little fluid ingested, the body is very short of water, and without water protoplasm cannot do its work; the leucocytes cannot combat the microbes. These injections supply the needed water. While the blood is short of water, there is every inducement for the microbe-laden exudation in the peritoneum to pass into the blood. The introduction of so much fluid into the blood alters the relations, so that instead of the current being from peritoneum to blood vessels it is from blood vessels to peritoneum. This is shewn by the increased discharge in cases in which drainage has been used. The injections dilute the toxins, and possibly thus render them less harmful.

This treatment does not cure every case. No treatment can be expected to succeed if it is postponed until the patient is moribund. Prognosis is so difficult that the answer may always be made to those who think that they have seen life saved by this or that treatment, that they were wrong in their estimate of the gravity of the case, and that it was one which would have recovered under any treatment. This is an answer which at present holds good against any attempt at numerical proof. There are, however, three reasons which seem to me good ones for thinking that the benefit which has followed saline injections is really due to them. First, there is great immediate improvement in the patient's appearance and in the pulse. Second, surgeons of experience have seen cases in which they judged that general peritonitis was present, and that the prognosis was hopeless, recover after these injections. Third, most cogent of all, cases have been observed in which patients suffering from symptoms of general peritonitis have been kept alive by these injections for eight or ten days, and then the disease has ended suddenly by crisis: the temperature falling, all other symptoms abating, and recovery then going on without a check: a termination not seen after any other treatment.

CHAPTER XIV.

PERIMETRITIS.

What is perimetritis?—Perimetritis means pelvic peritonitis set up by disease of the uterus or its appendages. Parametritis means inflammation, from similar causes, of the cellular tissue. When inflammation of the peritoneum from such a cause has become general, it is no longer called perimetritis, but peritonitis. The inflammation is then more important than the condition which caused it. The pelvic peritoneum may be involved in inflammation not starting from the uterus or its appendages; this is not called perimetritis, for the main disease is here outside the pelvis, and the participation of the pelvic peritoneum is an incident in itself insignificant.

It is not possible to draw a sharp line between peritonitis limited to the pelvis and general peritonitis. Perimetritis may spread and become general peritonitis. Acute general peritonitis may subside into chronic perimetritis.

Early symptoms of pelvic inflammation.—When inflammation is limited to the pelvis, in the first days of the illness we cannot distinguish between perimetritis and parametritis. If we look at cases in groups, there is more pain, and often more vomiting and flatulent distension, with perimetritis than with parametritis. But this general fact does not help us in individual cases, for in some cases of parametritis there is great pain, and vomiting and flatulence may accompany it; while in some cases of perimetritis pain is not severe, the belly is not distended, and flatulence is not complained of. The pain is in the lower belly, and in either illness may be referred to one side.

Inflammation leads to the exudation of lymph, which (*a*) either becomes organised into fibrous tissue, or (*b*) the exudation is serous, or (*c*) it becomes pus. The diagnosis of the seat of the inflammation cannot be made until enough lymph has been exuded to form a swelling that can be felt.

Then you diagnose the nature of the case from the position and shape of the swelling.

The symptoms of perimetritis.—These, broadly speaking, consist of fever with pelvic pain. The disease often begins with shivering.

(1) The temperature during the first few days is often from 103° to 104° F., or even higher. If the patient is placed under favourable conditions, and there is no persistent cause keeping up the inflammation, the temperature soon falls, often becoming normal at the end of a week. The pulse and respiration are quickened; the acceleration of the former is often greater than would be expected from the temperature; that of the latter is proportionate to the pulse. If the cause persists, the fever may last longer. Although fever is the rule while inflammation is going on, yet absence of elevation of temperature does not negative inflammation. In some cases of fatal peritonitis, and in many suppurating ovarian cysts, there is no rise of temperature, but the pulse is quick. When fever is at first present, fall of temperature does not always indicate that inflammation has subsided.

(2) There is pain. In the first few days this is severe. The patient, to limit movement and take off the pressure of the bed-clothes, lies with both knees drawn up. The abdominal muscles are contracted; the belly is hard. In inflammation limited to the pelvis there is not usually meteorism. Opiates may at first be needed. If the pain is only due to the peritoneal inflammation, in a few days it gets less; but it often continues, although comparatively slight, for weeks or even months. The pain is said to be of a burning character, and is constant, though with remissions in its severity. As the case improves remission of pain is replaced by cessation of pain, the intervals of freedom from pain become longer and longer, and the attacks of pain less frequent and less severe. Pain is usually the last symptom to disappear. When the patient has recovered in every respect but occasional attacks of pain, the extent to which this relic of the disease interferes with her work or her pleasure depends upon the tone of her nervous system. A strong woman will take no notice of occasional pelvic aching; a weak one will often be an invalid for months. Chronic pain

persisting after all signs of active inflammation have disappeared has been thought due to the presence of adhesions. The omentum is often adherent in the pelvis; such adhesions will be pulled upon in movements of the stomach and colon; and it has been reported that removal of pain has followed an operation in which such adhesions were broken down. Often patients will say that they have pain which precedes defæcation, and it is reasonable to think that such pain is due to adhesions hampering, and being stretched by, the peristaltic movement of the bowels.

(3) At the onset of the disease there is often vomiting, and with the fever there are the usual febrile symptoms of loss of appetite and thirst. As the patient improves, appetite returns, but relapses of pain are often accompanied with some failure of appetite. There is constipation, perhaps from the inflammation, but chiefly because many women are habitually costive, because opium may have been given, and because the patient does not take as much food as usual. Defæcation is painful, because there is congestion of the rectal mucous membrane. There is generally scalding in micturition and irritation of bladder, so that the patient has to pass water often. These symptoms may be troublesome and persistent without cystitis. The urine presents the usual characters of febrile urine, is scanty, high-coloured, of high specific gravity, and deposits urates on cooling.

(4) With fever, there is usually some wasting. If inflammation continues without fever, the patient gets thinner, although not so fast as when fever is present. Perimetritis may cause wasting so great as to resemble the cachexia of cancer.*

Perimetritis subsides gradually. Recovery, even when speedy and complete, is often interrupted by slight relapses. Even if the patient have no recurrence of febrile illness, she remains for months or years more liable to pelvic pain when her health is from any cause depressed than she was before.

Diagnosis.—In the beginning, the presence of fever with pelvic pain and tenderness is evidence that there is some kind of pelvic inflammation. A more precise diagnosis

* *See* Griffith, "St. Bartholomew's Hosp. Rep.," vol. xviii., 1882.

cannot be made until enough lymph has been effused to produce an increase of resistance that can be felt by the vagina. Then the kind of inflammation can be ascertained from the situation of this increased resistance. When the diagnosis of perimetritis has been made, it is not possible to go further so long as the belly is very tender. When tenderness has ceased to be great, the condition of the uterine appendages can be explored, and information gained as to the cause of the perimetritis.

There are three kinds of chronic perimetritis, according to the nature of the exudation—adhesive, serous, and purulent. The commonest kind is *adhesive*. In this form the lymph becomes organised into fibrous tissue which binds the pelvic viscera together. If the inflammation depend upon a cause which has ceased to be, in course of time symptoms disappear, the adhesions get looser, and may be completely absorbed. When perimetritis depends upon disease of the uterine appendages its persistence and recurrence depend upon the nature of the morbid change causing it, which is then the essential feature of the disease. I shall describe the important features of these cases in the chapter on salpingo-oöphoritis.

Serous perimetritis.—Adhesive perimetritis fixes the uterus in the place which it occupied before the inflammation, but does not displace it. With adhesive perimetritis there is often a little exudation of serum into small spaces limited by adhesions, and there may be small quantities of pus or blood in such places. But in naming the disease we take into account the morbid change which preponderates. We call the disease serous perimetritis only when there is a large encysted effusion of serous fluid.

Suppurative perimetritis.—By a perimetric abscess we mean a large collection of pus, not merely a spoonful or so. This condition offers the physical signs of a tumour.

Adhesive perimetritis.—I postpone for the present those rare cases in which inflammatory effusion, serous or purulent, forms a large swelling, and I describe the common form of adhesive perimetritis. By the time the disease has lasted a few days the lymph exuded has become organised into fibrous tissue, which thickens the pelvic peritoneum and

makes it stiff, so that the uterus becomes fixed. In parametritis there is also effusion of lymph, but in this disease the lymph is exuded into the cellular tissue. The diagnosis between perimetritis and parametritis is made by the shaps and position of the exudation.

Distinction between perimetritis and parametritis.—1. **Perimetritis.**—Remember the disposition of the pelvic peritoneum. Behind, it dips down lower than the uterus, forming the pouch of Douglas. In front, it only descends as far as the level of the os internum, and then rises up over the bladder, and at the sides, less steeply, towards the lateral pelvic wall. In health, the outline of the pelvic peritoneum is not perceptible to the touch; you can press up in front of and behind the uterus without greater resistance than that offered by the tension of the vagina. But when the pelvic peritoneum is thickened by inflammation its shape can be felt. Behind, it can be felt dipping down into Douglas's pouch. In front, its higher position and the interposition of the bladder and the cellular tissue between it and the uterus prevent it from being felt. At the sides, you can feel the induration joining the uterus at about the level of the os internum, and then sloping off upwards at the sides, so that you cannot follow it as far as the pelvic wall. The size of the swelling behind the uterus depends upon the nature of the exudation. If the peritonitis is adhesive, the uterus, though fixed, is not displaced, and the thickened fold of peritoneum behind and below it, is not large from before backwards. If the exudation be serous or purulent, there may be a big lump displacing the uterus forwards. But if the cellular tissue is not inflamed, you will find, on examining by the rectum, that the lump is between the vagina and rectum. I have seen the statement that perimetritis fixes the uterus to the sacrum. It cannot do this, for the rectum is between the sacrum and the retro-uterine peritoneum. When, after perimetritis, the uterus is fixed to the sacrum, there has been parametritis as well. If the lump be large, it may flatten the rectum, but it does not surround it. The diagnosis of perimetritis rests upon these anatomical features of the exudation.

2. **Parametritis.**—The cellular tissue of the pelvis lies

below the peritoneum. Most of it is at the sides, where it extends down to the attachment of the vagina to the uterus. There is a little in front, between the uterus and the bladder; still less behind, between the uterus and vagina and the peritoneum; but this latter is continuous with a good deal of cellular tissue at the sides of the rectum. Hence when inflammatory exudation into the cellular tissue forms a lump behind the uterus, you will find by the rectum that the swelling surrounds the rectum, forming a fixed half-ring of tissue continuous to the touch with the pelvic wall. When the cellular tissue at the side of the uterus is affected, the lump extends as low down as the vaginal insertion, and thence seems to slope off downwards until it blends with the pelvic wall. Inflammation of the cellular tissue in front of the uterus forms a lump interposed between the uterus and bladder, in close contact with the vaginal wall.

As an incorrect table of the diagnostic points has appeared in at least one text-book, I will attempt a better one.

By the Vagina.	
Perimetritis.	Parametritis.
In Front.	
Lump hardly felt.	Lump close down to vagina, between uterus and bladder.
At Sides.	
Induration felt at level of os internum, laterally retreating upwards out of reach.	Induration at level of vaginal insertion, sloping off downwards.
By the Rectum.	
Swelling in front of rectum.	Swelling extending around rectum back to pelvic wall.

The course of perimetritis.—This depends upon its cause. If this no longer exists, the patient soon gets well. If the cause persists, the patient has relapse after relapse so long as the cause is present. In the great majority of cases the cause is inflammation of the Fallopian tubes. This may be simply catarrhal, affecting the mucous membrane only. It may extend to the peritoneum, or, what is more probably the cause of the peritonitis, the products of inflammation may escape from the tube into the peritoneum, where they set up inflammation. In cases of

this mild kind, the peritoneal inflammation is simply adhesive; the inflammation of the tubal mucous membrane runs its course and ends in recovery, either without closure of the tubes, or at any rate without retention of much secretion in them. By the time perimetritis has subsided there is no longer appreciable disease in the tubes. Hence these are cases in which perimetritis is the main and apparently the sole morbid condition.

Treatment.—The principles of treatment are the same as in general peritonitis; the differences are in their application and effect. (1) *Rest in bed.* While the illness is acute, you have little need to urge this. But when the patient is nearly well, she will probably, from the monotony of bed and anxiety about her household duties, want to get up before she ought to. Insist on rest in bed until the temperature has been normal for a week, and until the patient has been for a week free from pain. (2) *Laxatives.* In perimetritis the disease causing it sometimes causes persistent and severe pain, but except in such cases, opium is seldom required in perimetritis for longer than a day or two. Give opium no longer than you can help; it will confine the bowels, so that you will have the large intestine full of scybala, the passage of which will cause the patient much suffering. As soon as you can leave off opium, give gentle aperients, so that the motions may be soft. (3) *Counter-irritation.* This relieves pain in a better way than opium, for it does so, not by lulling the sensory nerves, but by diverting blood from the painful parts. Prescribe small blisters to the lower abdomen, a fresh blister being applied every three days by the side of a former one. Or have the whole lower abdomen painted with lin. iodi often enough to keep it slightly sore, which will be twice a week at first, afterwards less often. (4) *As to alcohol.* When perimetritis is acute, alcohol may make the patient feel better, but in mere pelvic peritonitis asthenia is seldom so marked as to make alcohol necessary. When acute inflammation has subsided, you will generally find that alcohol makes the pain worse. If appetite is bad, a glass of light wine may help digestion; but, except for this purpose, forbid alcohol. (5) *The hot douche.* The hot vaginal douche, used for five or ten minutes night and morning, keeps the vagina

clean and somewhat relieves pain; I think by acting as a mild counter-irritant.

Should an operation be done?—Perimetritis is directly fatal only by extending and becoming general peritonitis. So long as the inflammation is limited to the pelvis, it is never directly fatal. In simple acute perimetritis (meaning by this, peritonitis limited to the pelvis, and not known to be produced by pre-existing chronic suppuration) the abdomen ought not to be opened. We cannot tell, at an early stage of perimetritis, whether it will end in complete recovery, or whether it is produced by disease which will persist. If the former, operation cannot improve the patient's prospect, and will involve danger to life and risk of subsequent disagreeable consequences. If there be a condition present which will delay recovery, and produce recurrence of perimetritis, it will be better to postpone the operation until fever has subsided.

Convalescence.—An attack of perimetritis, with its pain, anxiety, and confinement, always lowers the nervous tone of the patient. When she gets up she feels weak, she is more sensitive to pain than when she was well, and she will be anxious as to her future health. To rescue her from the danger of becoming a chronic invalid, get for her, if you can, a change to some bracing health resort, where she can have ozone and sunshine without domestic worries.

CHAPTER XV.

SEROUS PERIMETRITIS.

What is serous perimetritis ?—I have said in the preceding chapter that it is common in pelvic peritonitis for little spaces between adhesions to contain serous fluid. If we were obliged to use terms literally, we might call this "serous perimetritis." But in such cases the adhesions are the more important effect of inflammation; a few teaspoonfuls of serous fluid are of no consequence. Such cases we call *adhesive perimetritis*. We mean by "*serous perimetritis*" cases in which the serous fluid effused is important by reason of its bulk.

How serous perimetritis is produced.—We know nothing of the special causes which produce, in a few cases, large exudation of serum, any more than we know why one pleurisy leads to adhesions and another to great pleuritic effusion. Perimetritis from any cause may be serous. Abscess of the ovary has been observed to cause it. The lymph that is first effused becomes organised into fibrous adhesions, and then serous fluid is poured out, filling the space bounded by adhesions, and stretching tensely the parts which bound it. Why is so much serous fluid poured out? This pathological question is interesting, but at present unanswerable. The serous effusion is not a mechanical transudation, like the dropsy of heart disease, for the collection of fluid is so tense, and so displaces parts, that in the later stages of the disease it must be exuded against pressure. The transudation of much serum probably aids, in some way, the struggle of the phagocytes against the microbes, but we know not how.

Special features of serous perimetritis.—Serous perimetritis is important for two reasons: (1) Because it causes difficulty in diagnosis, and (2) because it leads to pressure symptoms. The collection of serum may be either (*a*) above the pelvis or (*b*) in the pelvic cavity. The accumulation of serum (*a*) above the pelvis more often leads to diagnostic

difficulties; that (*b*) in the pelvic cavity—*i.e.* in Douglas's pouch—more often causes pressure symptoms.

Diagnosis between serous perimetritis and ovarian cyst.—When fluid is under tension, its reacting pressure tends to make the cavity which contains it round; for the sphere is the shape which contains the largest contents in the smallest periphery. Hence serous perimetritis forms a

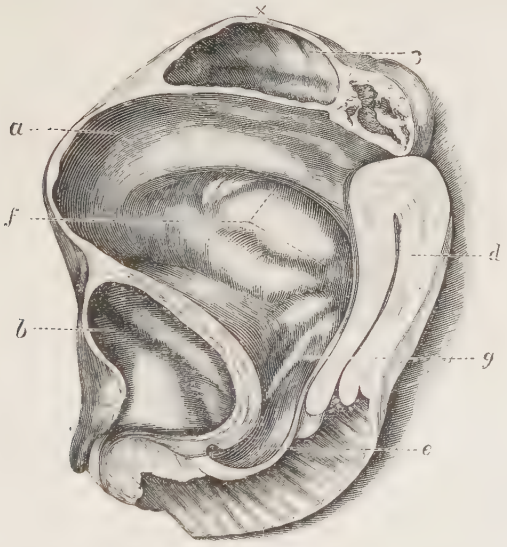


Fig. 74.—Drawing from nature of a perimetric effusion in front of and above uterus (*By permission of Dr. W. S. A. Griffith.*)

a, cavity; *b*, bladder; *c*, cystic ovary; *d*, uterus; *e*, fluid pressing down between uterus and bladder; *f*, broad ligament; *g*, ureter; *x*, point where Fallopian tube was adherent.

round fluctuating swelling, which may be either above or behind the uterus, but is always close to it. Now the most common round fluctuating tumour near the uterus is an ovarian cyst. Hence serous perimetritis has often been taken for an ovarian cyst. It is especially likely to be taken for an ovarian cyst if it is above the uterus (Fig. 74), but it may, when in the pelvis, be mistaken for a cyst. Operation has often been advised, and the abdomen has been opened, for tumours which proved to be serous perimetritis.

The points in diagnosis are these: (1) In serous perimetritis the formation of the tumour is preceded by symptoms of

inflammation—pelvic pain and fever. Small ovarian tumours cause neither pain nor fever. (2) The tumour formed by serous perimetritis is fixed; a small ovarian tumour is movable. (3) The tumour of serous perimetritis is usually bounded in front by coils of bowel matted by adhesions; therefore it is generally resonant on percussion, while an ovarian tumour is dull. Attention to these points will, in most cases, prevent serous perimetritis from being mistaken for an ovarian tumour.

Complex cases.—But cases occur in which it is impossible to say immediately whether a pelvic tumour is ovarian or due to serous perimetritis. Perimetritis may occur in a patient who has an ovarian tumour. Then the tumour will be fixed; there will be a history of pain and fever; bowel may become adherent in front of the tumour, or the contents of the tumour may decompose and liberate pus, and the tumour will then become resonant in front. In such a complex case operation will generally be indicated: the only criterion other than operation is the effect of treatment. Keep the patient in bed. If the tumour is ovarian, no difference will be produced; if it be serous perimetritis, at the end of a fortnight of this treatment it will be softer and smaller.

This diagnostic difficulty is of some historical importance, for probably some, at least, of the cases recorded by old writers, in which ovarian tumours were thought to have been cured without operation, were cases of serous perimetritis.

Diagnosis of serous perimetritis from hæmatocele and from abscess.—A serous effusion, an effusion of blood, and a collection of pus in Douglas's pouch present the same physical signs.

An effusion of blood into the peritoneum seldom forms a tumour so large and tense as that sometimes seen in serous perimetritis; for in great intra-peritoneal bleeding the blood lies free among the bowels, and does not form a circumscribed tumour. Intra-peritoneal hæmorrhage small enough to be limited to the pelvis may displace the uterus and form a tense tumour. Hæmorrhage into the cellular tissue underneath the peritoneum forms a tumour, having the characters of a parametric swelling, not of an intra-peritoneal effusion.

The diagnosis between a retro-uterine intra-peritoneal swelling containing *blood* and one containing *serum* is made by the history. Serous perimetritis is preceded by fever and pain; internal hæmorrhage comes on suddenly with faintness and pallor.

An *abscess* behind the uterus, whether in the peritoneal cavity, the tube, or the ovary, if large enough to form a tumour like that of serous perimetritis, can only be distinguished from it by (*a*) its clinical course, which is that it shows no tendency to absorption; and (*b*) by puncture. Abscess behind the uterus is commoner than serous effusion.

Coagulum in serous perimetritis. — Very rarely the serous effusion contains a fibrinous coagulum. Then the tumour will not fluctuate, but will feel solid or nodular. The possibility of some tumour other than an ovarian cyst may suggest itself. The diagnosis of this rare form of serous perimetritis cannot be made until the cavity containing the coagulum has been opened.

Pressure symptoms.—The tumour of serous perimetritis is *fixed* in the pelvis, and the fluid is under tension. It may cause (*a*) protrusion of the posterior vaginal wall at the vulva, by pressing Douglas's pouch down; (*b*) retention of urine, by driving the uterus so forward that it compresses the urethra; (*c*) painful and difficult defæcation, and even obstruction of the bowels, by its pressure on the rectum; (*d*) elongation of the cervix by stretching over the front of the tumour; and (*e*) sloughing of parts of the cervix, vagina, or rectum.*

The course of serous perimetritis.—Inflammation which leads to large serous effusion is of a severer kind than that which ends in adhesions; that is, there is greater fever, greater prostration, and the disease lasts longer. Serous perimetritis is sometimes fatal. Its termination greatly depends on treatment. If pressure symptoms are relieved, and if, in relieving them, antiseptic care is taken, dangerous effects will be averted. Remember that the serous effusion

* For evidence of these and former statements, see Williams, "Obst. Trans.," vol. xxvii.; Routh, "Obst. Trans.," vol. xxviii.; Griffith, "St. Bart. Hosp. Reports," vols. xvi. and xviii.; Matthews Duncan, "Obst. Journal," 1878, and "On Perimetritis and Parametritis"; Doran, "Obst. Trans.," vols. xxxi. and xxxiii.

is an *effect* of the inflammation, and indicates that the stress of the disease is past and gone, the invading microbes have been defeated, and the work of the organism is to repair the damage they have done.

Treatment of serous perimetritis.—So long as the tumour is not large enough to cause pressure symptoms, no treatment other than medical is required. Under such treatment—the chief thing in which is rest in bed—the serum will be absorbed and the tumour disappear.

If pressure symptoms are urgent, the size of the tumour must be lessened by removing the fluid. Even if you are in doubt as to the nature of the tumour, as it is fixed in Douglas's pouch (and serous perimetritis does not cause pressure symptoms unless it is within the pelvis), no greater harm can be done by puncturing it here than by opening the abdomen. You may tap it with a fine trocar, or aspirate it. I think the former better, because the strong suction of the aspirator more quickly withdraws fluid, and causes greater disturbance of the parts. The advantage of using a fine needle is that there is less danger of wounding a vessel in inserting it. The disadvantages are: (1) That the only information which either trocar or aspirator gives is the nature of the fluid inside the tumour; and (2) that if the tumour contains fibrinous coagula, they will not be got rid of. I think it is better to use the needle only for diagnosis. To let out the fluid, cut through the posterior vaginal fornix with scissors to an extent enough to admit two fingers, then cautiously make a small hole in the wall of the tumour, and enlarge this by tearing first with one finger, then with two. Thus all fluid and clot can be withdrawn. Then examine the interior of the cavity, empty it, and either put in a drainage-tube or pack the cavity loosely with iodoform gauze, letting the end of the gauze hang down in the vagina. Daily wash out the cavity with a non-poisonous antiseptic. It will gradually close.

When serous perimetric exudation is situated above the pelvis it does not cause pressure symptoms, and medical treatment is all that is required; rest in bed with laxatives and counter-irritation if there be pain.

CHAPTER XVI.

PERIMETRIC ABSCESS.

What is perimetric abscess?—We do not apply the term perimetric abscess to cases of perimetritis in which we suspect a little pus in interspaces between adhesions. Whenever suppurative inflammation extends from one viscus to another, it is probable that a little pus is present between peritoneal adhesions. We mean by an abscess a cavity containing a considerable quantity of pus.

Cullingworth,* in fifty abdominal sections for recurrent peritonitis, found in thirty suppuration, either in tubes, or ovaries, or peritoneum, intra-peritoneal abscess being present in two. My experience is that most inflammatory lumps in the pelvis get practically well; that is, they cease to cause symptoms, and get smaller or disappear. It is not the case that 60 per cent. of them persist and cause recurrent inflammation. The inference is, that pus in the pelvis may be absorbed. In hypopyon, the absorption of pus can be seen. In pyæmic suppuration of joints, pus is sometimes absorbed, and the use of the joint recovered. Similar absorption of pus may take place in the pelvis; but when there is enough pus to be called an abscess, the patient does not get well until the pus has been discharged.

A perimetric abscess is not usually a globular cavity, but one irregular in shape, having pouches in many directions. The condition begins as a number of little collections of pus and serum, in spaces formed by adhesions. These spaces increase and coalesce, and thus a big abscess of irregular shape is formed. A globular suppurating cavity within the peritoneum is usually a suppurated cyst. But an abscess may push up the bowels, and become globular in shape, and closely resemble an ovarian tumour (*see* Fig. 74). I have

* "Obst. Trans.," vol. xxxiv.

seen this, and Barnes* relates such a case, in which the abscess was due to the bursting of an ovarian cyst.

Causes of perimetric abscess.—Most intra-peritoneal collections of pus are complications of purulent salpingitis.† Although in most cases of purulent salpingitis the fimbriated end of the tube is closed, yet in the early stage it is open, pus may escape into the peritoneum, and thus an intra-peritoneal abscess be formed. I agree with Pozzi, that many cases described as pelvic abscess, cured by incision and drainage, were probably dilated and adherent suppurated tubes. The next most common cause of intra-peritoneal abscess is suppuration of the ovary, but this is commonly produced by extension of salpingitis; in a few cases by infection from the bowel. Disintegration or sloughing of uterine fibroids may produce suppuration in the peritoneum around. ‡ Intra-peritoneal abscess may result by extension of inflammation from the bowel. It is probably oftener due to bowel infection than the statistics of gynæcological surgeons show, for in many such cases the patient goes to a general surgeon and not to a gynæcologist. Intra-peritoneal abscess has been traced to a suppurating lumbar gland. § Lastly, as intra-peritoneal abscess is a disease from which patients often recover, in many cases the cause is not found out.

Diagnosis of perimetric abscess.—In the beginning the symptoms are those of perimetritis, and it is not possible to say whether the inflammation is going to end in adhesions or suppuration. The patient remains ill for weeks, pain and fever do not subside, tenderness becomes more local, and when it has diminished enough for bimanual examination to be practicable, a tumour is found. An intra-peritoneal abscess can be distinguished from an encysted intra-peritoneal collection of serum only by the greater hectic fever and wasting which accompany suppuration. A collection of pus within the peritoneum big enough to distend the cavity containing it into a globular shape (which is rare) can only be distinguished from an ovarian tumour by its

* "Diseases of Women," 1st edition, p. 363.
† See Cullingworth, *Birmingham Med. Review*, 1893.
‡ See a case by the author, *Lancet*, Dec. 8th, 1894.
§ Cullingworth, *Birmingham Med. Review*, 1893.

fixity, and its being accompanied by hectic.* An ovarian tumour which has suppurated and become fixed by peritonitis around it cannot be distinguished from an abscess in the peritoneal cavity unless the abscess be pointing.

Ovarian suppuration without fever.—Suppurated ovarian cysts do not always cause fever. Probably this is because the fever is due to a poison produced by microbes, readily taken in by the lymphatics in the peritoneum, but less easily absorbed by the wall of an ovarian cyst. A suppurated ovarian cyst without fever is fixed, and commonly produces pain and slow wasting; the nature of the tumour is generally doubtful until the abdomen has been opened.

When a small intra-peritoneal abscess has formed round a diseased tube or ovary, it is not possible to diagnose the situation of the pus until the belly has been opened. The fact of suppuration is inferred from the persistence, in spite of treatment, of pelvic tumour, pain, and fever.

Remote perimetritis.—The fact that the inflammation is *perimetric* implies that adhesions have shut off the area of inflammation from the rest of the peritoneal cavity. In perimetritis there may be at one place simply adhesions, at another serous exudation, at another a collection of pus. A collection of pus may burst and empty itself while another collection of pus is getting larger. Thus inflammation in the pelvis may have subsided, while at another part of the peritoneal cavity suppuration is going on, which may thus appear to be independent of any pelvic cause, although it started from the pelvis, and is really perimetric inflammation. This is called "remote perimetritis." A knowledge of the course of the illness is required for correct diagnosis in such cases.

Clinical course of perimetric abscess. — When perimetritis has gone on to suppuration, fever and wasting continue until the abscess bursts or is opened, and the pus is discharged. This event proves that the swelling was an abscess, but the intra-peritoneal situation of the abscess in many cases remains a conjecture.

An intra-peritoneal abscess may burst into the general peritoneal cavity, and set up fatal peritonitis, but this is

* See Barnes *loc. cit.* for a case illustrating this difficulty.

rare. An intra-peritoneal abscess usually bursts into the bowel. It is easy to understand why; a large surface of bowel, with a comparatively thin wall, forms part of the wall of every perimetric abscess. I offer no estimate of the frequency with which intra-peritoneal abscesses discharge into the bowel, because in most such cases the diagnosis is a conjecture. When there is a tumour with hectic fever, and simultaneously the tumour disappears, fever ceases, and pus is passed by the bowel, the diagnosis is almost certain. But the abscess may burst high up so that the pus is mixed with fæcal matter, and cannot be recognised; and then, although from subsidence of the tumour and improvement in symptoms you conjecture that an abscess has burst, yet certainty is not possible.

When a perimetric abscess has burst into the bowel, the course of the case depends on the cause of the suppuration. If the cause has ceased to exist, the abscess will close, and the patient get well. If the cause is persistent—such, for instance, as a suppurated ovarian cyst, or an extra-uterine sac containing bones *—the abscess cavity will go on discharging indefinitely, and the patient may ultimately die from exhaustion, or from lardaceous disease. †

When an abscess bursts into the bowel the pus escapes, but fæces, as a rule, do not get in. This is because (1) the abscess wall is usually under tension, and contracts when the pus has found vent; and (2) the opening is generally small, and when the bowel contracts, the muscle in its wall temporarily closes the opening. Now and then fæcal matter does escape into an abscess cavity. I have known the pressure of an indiarubber tube, put into an abscess cavity to drain it, lead to perforation of bowel in contact with the tube, and escape of fæces into the abscess cavity.

It is often stated that perimetric abscesses may burst into the vagina, the bladder, or externally. A perimetric abscess may burst in more than one place. Matthews Duncan states that he has a preparation of a perimetric abscess opening

* Suppuration from this cause, although it cannot clinically be distinguished from a perimetric abscess, yet is oftener under the peritoneum, in the cellular tissue, than in the peritoneal cavity.

† For an instance of the latter, see "St. Barthol. Hospital Rep.," vol. xvi., 1880, appendix, p. 32, case 105.

into bladder and rectum. * But abscesses bursting elsewhere than into the bowel are more often in the cellular tissue than in the peritoneum; and in many of them it is not possible to say, until the belly has been opened, what the relations of the abscess are.

The pus of a perimetric abscess is sometimes mixed with blood, either because the abscess was a suppurated hæmatocele, or from hæmorrhage from the abscess wall. Often, but not always, the pus is offensive, especially if the abscess is close to the large bowel. No inference as to diagnosis or prognosis can be drawn from the character of the pus.

Some abscesses seem to have no tendency to burst. Matthews Duncan states that he has opened abscesses which had been present for years, and showed no tendency to point. This peculiarity he believed to be one of perimetric abscess only; but he does not state upon what grounds he considered the abscesses he mentions to have been perimetric.

Treatment of perimetric abscess.—The treatment (other than that common to all forms of perimetritis) is, first, to let out the pus. Sometimes this is enough. In other cases it is not; we must go further, and remove the cause of the abscess, which is generally a suppurated tube or ovary. The best way of attaining these ends depends upon the position of the abscess. It may be:—

1. **Abscess in Douglas's pouch.**—If there is a fixed—that is, adherent—swelling behind the uterus which we take to be an abscess, matters cannot be made worse by opening it from the vagina, provided this be done with clean hands and instruments. (If there be doubt as to the swelling being an abscess, first puncture it with a fine trocar attached to an exhausting syringe.) Some do not approve of this course, on the following grounds: (*a*) Vaginal operation does not inform us of the state of the tubes and ovaries; (*b*) if these parts are diseased, they cannot be perfectly dealt with in this way; if, for instance, the abscess be caused by a suppurated ovarian cyst, it will go on discharging; and if there should be more than one cyst in the diseased ovary, the other cysts will go on growing. I think these objections not weighty, for the following reasons: (*a*) Some suppurated

* "Perimetritis and Parametritis," p. 161.

ovarian tumours can be cured by vaginal incision. Dermoid cysts, which are the ovarian tumours most liable to suppuration, are generally unilocular, and do not go on growing indefinitely. I have collected evidence* to show that when dermoid cysts are opened and drained by the vagina, the sinus shrinks and the discharge becomes so slight that the patient experiences no further inconvenience. (*b*) I have cured abscesses that I believe were suppurated tubes, and so have others, by opening them through Douglas's pouch, although, for reasons explained above, it was impossible to be sure how the boundaries of the pus cavity were formed. (*c*) The removal of adherent suppurating tubes and ovaries is a difficult operation. The immediate risk to life, and the more remote risks of an incomplete operation, so that the patient is left with a sinus discharging externally, and of a ventral hernia, are avoided if the abscess is attacked by the vagina. If the attempt to cure by vaginal incision fail, and a pelvic tumour persists, abdominal section can afterwards be done, and as the tumour was adherent before the vaginal incision was made, no difficulty will have been added to the case by that incision.

How to open it.—Put two fingers of the left hand into the vagina. Guided by them, cut with a pair of scissors for about an inch and a half from side to side through the mucous membrane of the posterior vaginal fornix, about halfway between the lowest part of the downward bulging tumour and the cervix uteri. If the tumour is an abscess, the mucous membrane will be its toughest covering. Having cut through this, try to push your fingers on into the abscess cavity. If the tissues are softened, as they often are, you will do this easily. If you cannot, cut carefully on with scissors, feeling as you proceed the thickness and character of the tissues you are cutting through, and tearing your way onward with the fingers as soon as you can do so. When you have got one finger into the abscess cavity, enlarge the opening by tearing until you can get two fingers in; explore the cavity; feel if there be any solid contents, such as hair or bones, and if so, empty it. Lightly stuff the cavity with iodoform gauze. Free hæmorrhage from an opening

* "Obst. Trans.," vol. xxvii.

in Douglas's pouch is rare, no large vessels being in this situation. If there should be more bleeding than is safe, stop it by putting a thick plug of iodoform gauze into the wound; or tie a piece of string round the middle of a clean sponge and insert the sponge astride the opening. A free opening is better than tapping, because by the latter the cavity can be neither explored nor emptied. Making the opening as much as possible by tearing with the fingers has the advantage that a tear bleeds less than a cut, and that softened tissues tear more easily than healthy ones, so that the wall of the pus collection is more likely to give way to your fingers than healthy tissue. Therefore by tearing you get free access to the pus collection with less risk of bleeding and of wounding what ought to be avoided, than if an opening of the same size were made with knife or scissors.

2. **Abscess above Douglas's pouch.**—The lump may be behind and on one side of the uterus, but higher up than Douglas's pouch. Cullingworth* has pointed out that it is often high up when the inflammation results from puerperal infection, because, while the puerperal uterus is large, the ovaries and tubes are above the pelvic brim; hence, if inflammation attack the pelvic peritoneum by way of the Fallopian tubes before the uterus has sunk into the pelvis, the uterine appendages will get fixed in a higher position than that which they occupy in the unimpregnated state, and an abscess around them will be higher up also. When the abscess is thus situated, you cannot open it from the vagina without risk of wounding large vessels in the broad ligaments. Therefore, in such a case, as soon as it is clear that under expectant treatment the patient is getting worse instead of better, surgical treatment is indicated, and the best mode of treatment is by abdominal section.

3. **Abscess above the pelvis.**—The abscess may be above the pelvis, apparently not connected with the uterus. The cases which call for interference are those in which the pus lies under the abdominal wall. In these cases we have a fixed tumour, adherent to the abdominal wall, with hectic fever and wasting. It is generally impossible to say whether

* "Obst. Trans.," vol. xxxvi.

such a tumour is an abscess or a new growth with inflammation in it and around it. If the patient is getting worse, the proper course is to explore such a tumour by cutting through the abdominal wall over it. After the swelling has been opened and found to be an abscess, it is often impossible to be sure that it is intra-peritoneal, for the adhesions which bound it shut off the peritoneal cavity and cause the interior wall of the abscess to feel like a smooth continuous membrane. Although the shape internally of such an abscess is anfractuous, yet on abdominal palpation before being opened it may feel globular. Having opened it, drain it by lightly stuffing with iodoform gauze.

CHAPTER XVII.

SALPINGO-OÖPHORITIS.

In the previous chapters I have spoken of the symptoms and effects of peritoneal inflammation. I have now to describe the conditions which in women commonly bring it about, keep it up, and cause it to recur after it has been cured. These conditions have only comparatively recently been investigated, and therefore on many points our knowledge is incomplete. The conditions we have to deal with are that the ovary, or the tube, or both, are inflamed and are matted together by adhesions.

The correct name is peri-salpingo-oöphoritis, which denotes inflammation of peritoneum, tubes, and ovaries. This is too long for use. As clinically we know no salpingo-oöphoritis without inflammation of the adjacent peritoneum, the "peri" is not needed for any differential purpose, and may be left out.

I shall describe first the etiology and morbid anatomy of salpingitis; then that of öophoritis; and then salpingo-cöphoritis from a clinical point of view.

Importance of the causes of perimetritis.—Perimetritis is almost always provoked by micro-organisms, and is the process by which the peritoneum prevents the microbes from poisoning the whole body. The inflammation excited by mechanical injury, such as cutting with a knife, or pushing the sound through the uterus, is local, and causes no grave symptoms unless the agent of the injury has been the bearer of microbes. In most cases you can infer from the clinical history the kind of organism and the way in which it got to the peritoneum. In a few the organism can be detected but we cannot tell how it got where it was found. In still fewer cases you will fail to find the cause.

In perimetritis, the inflammation of the peritoneum causes the symptoms; the morbid states which set up this inflammation, cause either no symptoms at all, or

symptoms so slight that they are overlooked. But the course of perimetritis depends entirely upon its cause. If the cause is transient, the inflammatory changes tend with time to bring the parts nearer and nearer to a state of health, and the patient in the end gets well, and keeps well. If the cause persists, the peritonitis either continues acute, or, after it has become quiescent, recurs time after time.

Septic poisoning.—The most common cause of salpingo-oöphoritis is what is called "septic poisoning" after delivery or abortion. I say "what is called," because I think it possible that "septic poisoning" denotes not one poison and one disease, but that the term includes different diseases, produced by different organisms, and differing in their clinical course. The best known of these is the *streptococcus pyogenes;* but bacteriologists of repute think that under this name several different organisms are included. At present the nature of the micro-organisms is a question for the bacteriologist, not for the practitioner. For the latter, the important point is that these diseases are very rare after labour or abortion when efficient antiseptic precautions are used. The diseases which lead to salpingo-oöphoritis generally begin comparatively late in the lying-in period—a week, or a fortnight, or even later, after delivery. Septic infection through the fresh wounds made in delivery quickly affects the whole system, and leads to death before local inflammation has had time to develop. When by antiseptic precautions at the time of labour this is prevented, yet, if during the lying-in there is any defect in the precautions used to keep the genital canal aseptic, septic micro-organisms may get into it and excite an inflammation capable of spreading to the peritoneum. If any dead tissue remain in the genital canal after delivery, and microbes get access to it, inflammation may be set up, and spread to the peritoneum. Hence some puerperal women are safer if they have antiseptic vaginal douches as long as the lochia last. But if it is certain that everything is normal, and that no dead tissue is retained, they are unnecessary; and it is possible that a person who does not understand surgical cleanliness and accurate measurement may, while thinking that she is destroying germs by an antiseptic

douche, be really inoculating them with a dirty syringe. Therefore I think it not wise to prescribe them as a routine practice among the poor.

In the majority of cases in which we can find a cause, the disease can be traced back to childbirth.* In some, the patient gives a history of an acute illness during the lying-in period, and of chronic pain persisting ever since. In others, the patient has got up and believed herself well, and within a few weeks has been taken ill. Because the illness followed delivery it is inferred that the tubes became inflamed during the lying-in, and that the acute symptoms were caused by the escape of inflammatory products from the end of the tube, and consequent extension of inflammation to the peritoneum. Different observers agree in estimating that from one-quarter to one-third of cases of salpingo-oöphoritis arise in this way.

Septic poisoning from maltreatment. — Sometimes gynæcological treatment is in fault. Endometritis, leading to salpingitis, and then to perimetritis, may be produced by the sound, the tent, the curette,† the knife, or scissors; by injections or by caustics. In days gone by it was often produced by intra-uterine pessaries. This may happen in one of two ways: (*a*) The instrument itself may be dirty, and the direct bearer of poison; or (*b*) the operation may lead to the retention in utero of dead tissue or stagnant discharge, which offers food for septic microbes.

The wearing of an intra-uterine pessary irritates the endometrium, and often causes inflammation which may extend to the peritoneum. When anteflexion was supposed to be a disease, many deaths were caused in this way.

Tents, used without antiseptic precautions, may set up endometritis, and this may lead to perimetritis. A dirty tent may carry micro-organisms into the uterus, and these may find nutriment in the tissues damaged by being forcibly expanded by the tent.

Operations upon the uterus, such as the removal of retained secundines, of fibroids, of adenomata, if done without

* Martin, "Zeit. für Geb. und Gyn.," Bd. xiii.; also Bernutz and Goupil, "Diseases of Women," vol. ii., and "Zweifel, Arch. für Gyn.," Bd. xxxix.

† *See* a case by Pichevin, "Annales de Toc.," 1892.

care as to cleanliness and the avoidance of unnecessary injury, may set up endometritis, and thus, indirectly, salpingo-oöphoritis.

Septic micro-organisms may reach the peritoneum from the genital canal in one of two ways: (1) They may spread through the uterine wall, or through the wall of the tube to the peritoneum. The inflammation that does this is of the more severe and rapidly fatal type. (2) They may cause inflammation of the endometrium, which spreads to the tube, and thence to the peritoneum, by direct continuity. This is probably the common way.

Perimetritis from uterine new growths.—Cancer of the uterus is often accompanied by endometritis. Cancerous growths, either in the uterus or the cellular tissue, sometimes extend to the peritoneum. Perimetritis, produced in one of these ways, is an almost invariable accompaniment of the later stages of cancer. The fixation of the uterus, which soon comes on in cancer, and is usually due to the growth of the cancer into the cellular tissue, may be due to perimetritis.

Fibroids of the uterus, more particularly sub-peritoneal tumours, may undergo degeneration into a pulpy detritus; and at a spot so degenerated and softened, the peritoneal covering may give way, and the detritus set up perimetritis.

Gonorrhœa.—This disease, which is produced by an organism called the gonococcus of Neisser, sometimes extends to the Fallopian tubes, and from them to the peritoneum. Cases from this cause are less frequent than those which date from delivery or abortion.

When gonorrhœa extends to the Fallopian tubes, it does so, as a rule, within two months. Schmitt* finds that gonorrhœa extends to the uterus in about one case in five, and to the tubes in about one case in twenty. The best estimate from statistics† that I can form of the frequency of gonorrhœa as a cause of salpingo-oöphoritis is that it is answerable for about one-fifth of the cases.

* Menge, "Zeit. für Geb. und Gyn.," Bd. xxi.; "Arch. für Gyn.," Bd. xxxv.

† *See* Martin, "Zeit. für Geb. und Gyn.," Bd. xiii., and Von Rosthorn, "Arch. für Gyn.," Bd. xxxvii.

The frequency with which gonorrhœa causes pelvic peritonitis has been exaggerated. One writer has said that gonorrhœa in the male is never really cured; that the disease persists in a "latent" form, causing no symptoms, but nevertheless capable of producing disease in a healthy woman. The basis of fact underlying this statement is: (*a*) That patients with gonorrhœa sometimes think themselves well before they really are, and leave off treatment before the doctor has told them they may do so; (*b*) that in a patient with stricture, gleet may continue indefinitely; (*c*) that people with gonorrhœa will not always admit it, and therefore its presence is often inferred, because the history is like it, although there is no evidence of infection; (*d*) a man who marries soon after getting gonorrhœa is likely to be ashamed of himself, and antedate the disease. These cases should not be called "latent" gonorrhœa, but *neglected* gonorrhœa, because the patient can be cured if he will be properly treated. Any doctor who has been for twenty or thirty years in general practice can tell of many young men who have been under his care for gonorrhœa, and have afterwards married, and they and their wives have remained healthy and fertile.

Tubercle.—Next in frequency among the known causes comes tubercle. Tubercular disease of the Fallopian tubes or ovaries is generally either secondary to pulmonary tuberculosis, or a part of general tuberculosis of the peritoneum. Primary tuberculosis of the ovary has never been observed. But the observations of Dr. Whitridge Williams* show that primary tubercular disease of the Fallopian tubes is much commoner than was formerly supposed. His estimate is that about 7 per cent. of cases of chronic inflammation of the Fallopian tubes are due to tubercle. There is nothing peculiar in the symptoms of the salpingitis and perimetritis produced by tubercle. It can only be found out after the tubes have been removed. In advanced cases the tubes are filled with cheesy stuff; there are ulcers in the mucous membrane, with cheesy stuff at their base, and tubercles around. In less advanced cases there are miliary tubercles studding the tube (Fig. 75). In the very earliest cases the tube looks inflamed, but there is nothing by which the

* "American Gynæcological Trans.," vol. xvii.

unaided senses can discover the tubercular nature of the disease. This can only be ascertained by finding tubercle bacilli with the microscope. In the experience of Dr. Whitridge Williams, these latter cases are more frequent than those in which the disease is so advanced that it can be identified without the microscope. This preponderance of slight cases suggests that either many of them get well, or else they early infect the lungs, and then operators are

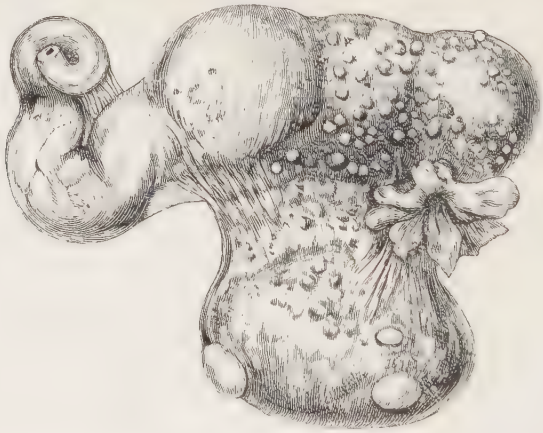


Fig. 75.—Tubercular disease of Fallopian tube and ovary. (*After Cullingworth.*)

deterred from removing the tubes. There is a very chronic form in which there is a great formation of fibrous tissue around the tubercles, and Dr. Williams considers, and I think correctly, that this is a curative process. Tubercular disease of the Fallopian tubes occurs at all ages, but most frequently during the years of functional activity; that is, from twenty to forty. It does not cause amenorrhœa; this is only present when there is advanced phthisis also.

We do not know how the tubercular bacilli get to the Fallopian tube. It is supposed that they may get in through the blood, or through the peritoneum, or through the bowel or bladder, or by fingers, or instruments, or linen, or by coitus. When we find many possibilities like this, some one mode is generally far commoner than all the rest, but in tuberculosis of the tubes we do not know which is the common one.

Chill (?)—In some cases perimetritis occurs in patients who have not been pregnant, who have had no symptom or sign of gonorrhœa, and in whom everything is consistent with virginity. Such cases are often attributed to cold. All modern research goes to show that there is no such thing as the production of peritonitis by cold. Hence some apply to cases which seem to have been produced by cold the term "crypto-genetic," holding that they are only cases in which the cause has not been found out. But that catarrh of a mucous membrane may follow a chill which is not counteracted by warmth or exercise is an every-day experience. It probably acts by so lowering the vitality of the mucous membrane that an organism can affect it which it would in health have resisted.

Catarrh of the vagina, leading to temporary leucorrhœa, is common. We know little or nothing about catarrh of the endometrium, because this structure is in a continual state of change, and we do not know what these changes are well enough to understand how catarrh modifies them. A chill may indirectly inflame the peritoneum by causing catarrh of the vagina, uterus, and tubes, which extends to the peritoneum. The inflammation of the endometrium may spread along the tubes to the peritoneum, and set up perimetritis. The disease of the tubes in these cases is probably slight. Perimetritis occurring in the virgin is usually of this kind. It is the characteristic of catarrhal inflammation that its natural course is to end, under favourable conditions, in complete recovery. In some cases there is a history of inflammatory symptoms having followed checking of menstruation by cold. These are the cases which best support the idea that salpingitis may be due to cold. It has also been supposed that there is some special liability to inflammation during menstruation, so that causes such as coitus, or operations on the genitals, or syringing, practised at this time, may cause inflammation. I know of no evidence of this. It has been attributed to sexual excess, but women liable to this supposed cause are generally exposed also to infection.

Bowel infection. — In some cases no cause for pelvic suppuration can be found other than close adhesion of the

affected part to bowel affected by dysentery, enteric fever, or inflammation of some kind. It is supposed that in such cases micro-organisms may have entered from the bowel and produced suppuration. Pozzi claims to have been the first thus to explain certain cases. The bacterium to blame in these cases is the bacterium coli commune—an organism present throughout the whole alimentary canal, and harmless to healthy tissues, but virulent in tissues which are diseased.

Developmental faults.—Lawson Tait thought that persistence of an infantile condition of the uterus caused inflammation of the uterine appendages.* Freund has blamed imperfect development of the tubes. I cannot understand how imperfect development of the uterus should make the tubes become inflamed. But it may be associated with badly developed tubes; and if such tubes become inflamed, it is possible that the greater tortuosity which, according to Freund, marks such tubes, may obstruct the exit of inflammatory products, and thus help to make the inflammation chronic.

Exanthemata.—Lawson Tait† had seen some cases which dated back to one of the exanthems—smallpox or scarlet fever—and which he therefore believed due to salpingitis occurring as a part of the febrile disease. Such cases are rare, but important, as I shall show when I describe menstrual retention.‡

Actinomycosis.—One case of actinomycosis of the tube has been observed.§

Syphilis.—One case of syphilitic gumma in the tube has been recorded.‖ This and actino-mycosis are pathological curiosities.

The term salpingo-oöphoritis includes inflammation not only of the peritoneum and the Fallopian tube, but of the ovary. Consider therefore now the inflammations of the ovary.

* *Brit. Med. Journal*, April 16th, 1887.

† *Ibid.*

‡ For a case accompanying measles, *see* Gailliard, "Nouvelle Arch. d'Obst. et de Gyn.," Suppl., 1892.

§ Zeemann, "Med. Jahrb.," Wien, 1883.

‖ Bouchard and Lepine, *Gaz. Méd. de Paris*, 1866.

Chronic oöphoritis without fixation.—Morbid anatomists, who open dead bodies, and abdominal surgeons, who open the belly during life, agree that they know nothing of chronic inflammation of the ovary not attended with fixation. Chronic oöphoritis without fixation has nevertheless been thought to be one of the commonest diseases of women. Those who held this opinion took pain to be a sign of chronic inflammation; their opinion is an inference drawn from the signs and symptoms, not from examination of the ovaries. I have discussed this question in Chapter VIII.

Oöphoritis with fixation.—Two kinds of oöphoritis occur with chronic inflammation of the tubes and pelvic peritoneum: peri-oöphoritis and abscess of the ovary.

Peri-oöphoritis.—This means inflammation of the peritoneum around the ovary, leading to exudation of lymph around and over the ovary. This lymph becomes organised into false membranes covering the ovary, and adhesions binding it to neighbouring parts—to tube, uterus, bowel, and parietal peritoneum; sometimes to the opposite tube and ovary. It has been said that the inflammation spreads to the ovary, attacks it from without inwards, and becomes chronic. The consequences attributed to such disease are* that the ovary becomes enlarged and more rounded, first from hyperæmia, then from organisation of exuded leucocytes. The tunica albuginea gets thickened, and its surface puckered, grooved, and fissured. When the morbid condition has lasted long, there is overgrowth of connective tissue in the ovarian parenchyma. The Graafian vesicles have lost their epithelium, their basement membrane, and their rounded shape, and are surrounded with a narrow zone of infiltration of round cells, so that the follicles have almost entirely disappeared. The destruction of the follicles is a late change; they long retain their normal condition. The vessel walls are thickened from peri-arteritis. This change resembles what is seen in old age. According to Nagel, this morbid change may go on till the ovary is as big as a goose's egg, and its surface is like a mulberry. He thinks that the fissures on the surface of the ovary may lead to cysts. The sides of a fissure adhere near the surface, and

* *See* Nagel, "Arch. für Gyn.," Bd. xxxi.

then we have below the adhesions a cavity lined with germ epithelium; this may become a cyst.

These changes have been described by competent and accurate observers. We know not in what proportion of cases peri-oöphoritis extends to the substance of the ovary, and produces these changes; nor know we upon what such extension depends. We have no evidence that such chronic inflammation of the ovary adds to the symptoms, or modifies the course, of the perimetritis upon which it depends.

ACUTE INFLAMMATION OF THE OVARIES.

Two forms of acute oöphoritis have been described.*

1. Parenchymatous or follicular.
2. Interstitial.

In severe cases both forms exist together.

1. **Parenchymatous or follicular.**—The morbid changes, when slight, can only be detected by the microscope. The contents of the follicles become first turbid, then purulent. The epithelium lining the follicle undergoes first cloudy swelling, then granular degeneration. The ovum becomes opaque, and the germinal vesicle disappears. This disease does not produce swelling of the ovary that can be appreciated clinically.

This disease has been found after death from the acute exanthemata, cholera, relapsing fever, and septicæmia, from poisoning with arsenic or phosphorus. In blood poisoning rapid destruction of epithelial elements is liable to occur in the abdominal glandular organs, so that follicular oöphoritis is an example of a general pathological fact. It has no special symptoms, and cannot be diagnosed.

It has only a hypothetical importance. It has been said that it may cause peritonitis; that by destroying ovarian follicles it may lead to sterility; that cases occur of persistent ovarian pain following the exanthemata; and that these are due to acute oöphoritis occurring in the acute stage of the

* The account I give is, like those given in every text-book, based on a paper by Slaviansky ("Arch. für Gyn.," Bd. iii., S. 183). Slaviansky's account is a general description. He gives no detailed facts, no statement of the number of observations on which his conclusions are based, nor descriptions of the organs in any particular case.

exanthem. I know not of any case in which acute follicular oöphoritis has caused peritonitis, nor of any evidence that sterility is more frequent in women who have suffered from any of the exanthemata; nor of any anatomical evidence that pain following an acute exanthem depends upon chronic follicular oöphoritis.

2. **Interstitial oöphoritis.**—Three forms or degrees are described. (*a*) *Serous;* in which the ovary is large, soft, œdematous; its cut surface glistening and moist. (*b*) *Suppurative* or *hæmorrhagic;* in which there are yellow lines of suppuration running from the hilus; or, in a more advanced stage, small abscesses; or capillary hæmorrhages are scattered through its tissue. (*c*) *Necrotic.* In these, the worst and most acute cases, the whole organ is broken down into a pulp, its structure being no longer recognisable. In the severe forms the follicles are affected as well as the interstitial tissue.

Between the slighter forms of inflammation (*a*) and changes supposed to result from them, on the one hand, and physiological changes on the other, it is very difficult to draw the line. Hyperæmia, slight hæmorrhage, atrophy of follicles, thickening of the tunica albuginea, puckering of the surface, are all of them consequences of the natural ripening and bursting of follicles.

The two latter forms (*b*) (*c*) are consequences of septicæmia or pyæmia; and when patients have died rapidly from one of these diseases, and the ovary has been found swollen and vascular, it has been supposed that an early stage of interstitial oöphoritis was present.

In puerperal septicæmia, oöphoritis with suppuration is frequent. Olshausen, out of twenty-seven cases of puerperal septicæmia, found disease of the ovary in thirteen. The inflammation is generally bilateral, but more advanced on one side. Only in a minority of cases is the ovary enlarged enough to be felt. In such cases the abscess in the ovary is only one of the results of the infection of the circulation by virulent microbes. It is seldom diagnosed, and if it were, the removal of the suppurated ovary would make little difference in the patient's condition.

Acute puerperal abscess of the ovary.—Many such cases

have been described in old books, in which the diagnosis was made on clinical grounds; they are simply pelvic abscesses with nothing to show their place of origin, but suspected to have begun in the ovary. But abscess of the ovary may be a part of parametritis, the inflammation spreading along the broad ligament to the hilus of the ovary.* It may arise by extension of inflammation from a suppurated tube.† Ovarian cysts, especially dermoids, are prone to suppurate and rapidly enlarge, as a result of bruising during delivery. Most cases of suppurated ovaries following delivery, and not associated with general septic infection, are in my opinion suppurated cysts. All that I have seen were suppurated cysts. Such a suppurated ovary can only be clinically diagnosed as a perimetric abscess. Its diagnosis and treatment will be found in Chapter XVI.

Clinical aspect of salpingo-oöphoritis.—Oöphoritis—meaning by this inflammatory changes so marked as to be indubitable—is always associated either with pelvic peritonitis or pelvic cellulitis, and often with inflammation of the tubes. Distension of the tubes is always associated with perimetritis, for it cannot occur unless the orifice of the tube is closed. The most common condition is that in which all the parts (tube, ovary, and peritoneum) are affected—the condition described by the term "*inflammation of the uterine appendages*," or "*salpingo-oöphoritis*."

An anatomical classification of the cases included under this head is impracticable and useless. We must make a classification which will be clinical, practicable, and useful.

Inflammation of the tubes without peritonitis.—We know nothing about the symptoms, if any, which are caused by inflammation affecting the Fallopian tubes, but not the peritoneum. Those who have investigated the condition of the Fallopian tubes in the dead body tell us that catarrh of the tube, indicated by congestion of the mucous membrane and the presence of a little serous fluid in the tube, is common; and no one has yet described any symptoms of pelvic disease in such patients. Acute suppurative

* *See* Lewers, "Obst. Trans.," vol. xxx., and Targett, "Obst. Trans.," vol. xxxvii.

† *See* Cullingworth, "Obst. Trans.," vol. xxxvi.

salpingitis, leading to peritonitis, has never yet been diagnosed until the peritonitis had begun.

Salpingo-oöphoritis. — When inflammation of the tube has extended to the peritoneum, lymph is thrown out which becomes organised into adhesions which bind together the tube, ovary, and adjacent peritoneum; and these parts form a lump, the component parts of which cannot be distinguished without opening the abdomen.

Fig. 76.—Diagram illustrating salpingitis; right tube thickened and closed. (*After Martin.*)

By the time we can be sure that salpingo-oöphoritis is present, the ovaries and tubes are matted together by inflammatory exudation around them (Figs. 76, 77, 78). A classification to be useful must be practicable. Therefore I adopt a classification of these cases according to their clinical features. Inflammation of the tube may be of three kinds: (1) *Simple catarrhal inflammation;* (2) *Inflammation with thickening;* (3) *Inflammation with dilatation,* according to the predominant change.

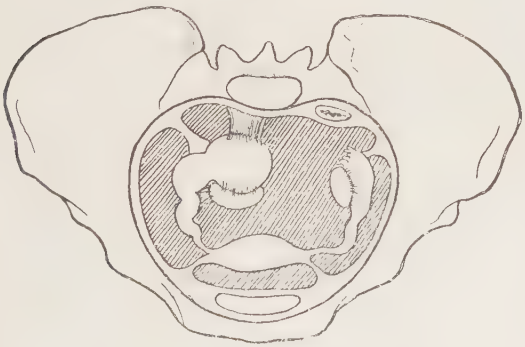


Fig. 77.—Diagram illustrating salpingitis; right tube thickened, dilated, lengthened, tortuous, adherent to ovary and pelvic wall; left tube thickened and adherent to ovary. (*After Martin.*)

1. **Catarrhal salpingitis.** By this I mean an inflammation due to a transient cause. If this cause is an organism,

it is one which soon perishes. The inflammation it produces subsides without leading to suppuration, thickening, dilatation, or closure of the tube, and is probably limited to the mucous membrane. The pelvic peritonitis is of short duration, and ends in complete recovery. If there be such a thing as salpingitis and peritonitis from the checking of menstruation, it is of this kind.

2. **Salpingitis with thickening.**—The second group of cases comprises those in which the inflammation persists long and recurs, producing great thickening of the tube, but not great dilatation. These cases resemble in the beginning catarrhal inflammation of the tube. But mere catarrh of the tube, if properly treated, is not persistent. This disease in the tube is frequently associated with disease in the ovary, and always with adhesions. The tubes are thickened. The thickening may affect (*a*) the fibro-muscular wall; (*b*) the mucous membrane.

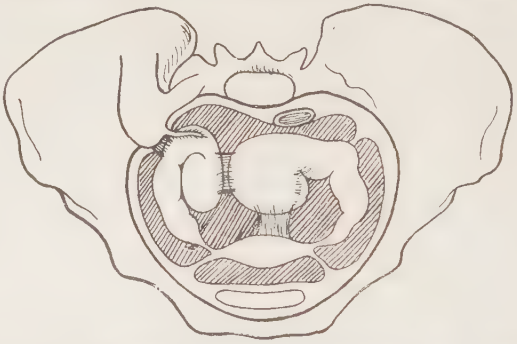


Fig. 78.—Diagram illustrating salpingitis; both tubes thickened, closed, tortuous, adherent to one another, to uterus and to pelvic wall. (*After Martin.*)

(*a*) This has been given the name of *pachy-salpingitis*. Another name is *myo-salpingitis productiva*. The wall may be at some places half an inch thick. This thickening is due to fibrous tissue, which is organised inflammatory exudation between the muscular bundles. The tube is tortuous, and fixed by adhesions in its contorted position. Its canal is often dilated, and at the bends it may be obstructed, so that saccular dilatations may be present in it, and its wall is rigid. But although the canal may be larger than normal, yet the size of the tumour formed by the diseased tube is principally due to the thickening of the wall. It contains fluid, but is not distended with fluid. Doran says: "An almost purely interstitial salpingitis, where the tube is thick,

hard, yet unobstructed, certainly exists, and so little is the mucous membrane involved that the disease may be considered as primary."*

(*b*) There are changes in the mucous membrane, which is overgrown, thickened, œdematous, injected so as to be purple in colour, and ecchymosed, or, it may be, slate-coloured. I have seen calcareous plates and nodules in the mucous membrane. On microscopical examination, it is found to be infiltrated with leucocytes. The recesses between the folds are in some cases so large and multiple as to suggest that there has been overgrowth of gland tissue. Mr. Bland-Sutton regards the folded lining membrane of the healthy tube as really glandular. The process is like the formation of an erosion in the cervix. In some cases the glandular follicles penetrate nearly the whole thickness of the tube. Adjoining folds may adhere together so as to shut off the recess between them into a closed sac, and from this change the tube comes to have an alveolar appearance, the alveoli being lined with columnar epithelium. These changes in the mucous membrane when present exist in varying degree. Cases in which they are well marked have been given the distinguishing name of "*follicular salpingitis.*" But we know of no essential difference between cases in which such overgrowth of mucous membrane is conspicuous and those in which it is not; the difference is one of degree only.

The ovary is generally enlarged, the increase in size being due to overgrowth of its fibrous stroma, and to its being covered by layers of organised inflammatory exudation.

3. **Inflammation with dilatation.**—The third group of cases comprises those in which the tumour formed by the diseased appendages is mainly due to a distinct cavity or cavities containing serous fluid pus or blood. These are called by the morbid anatomist, hydro-salpinx, pyo-salpinx, and hæmato-salpinx, respectively; but clinically they must be grouped together under the name of *cystic salpingo-oöphoritis.* Another name is *sacto-salpingitis.* The compound name is better because in the present state of our knowledge there is no way of ascertaining, short of opening the abdomen,

* "Obst. Trans.," vol. xxxi. p. 354.

whether the tube or ovary forms the cyst. Even after the abdomen has been opened, and the parts taken out, it is sometimes impossible to say what were the parts forming the wall of the suppurating cavity; the tube and ovary are so matted together by adhesions and altered by inflammation. This being so, there is no advantage in affecting a refinement of diagnosis that we cannot pretend to at the bedside.

Pyo - salpinx.—Pyo-salpinx is the most important of these conditions, because it may kill by setting up general peritonitis. It is a result of purulent salpingitis. The tubes may become closed in two ways: (1) by peritoneal adhesions forming around the fimbriated end; (2) by swelling of the submucous tissue bulging over, and closing in the fimbriæ.*

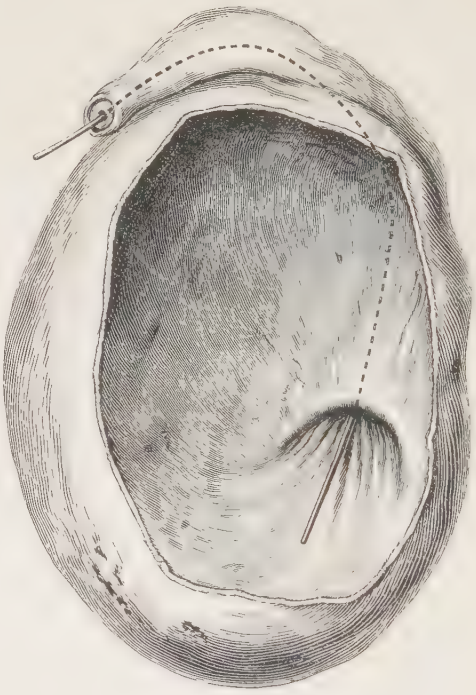


Fig. 79.—Large pyo-salpinx. (*After Cullingworth.*)

In all cases of inflammation of the tube the canal is probably closed for a time by swelling of the mucous membrane, just as the nose gets stuffed up in catarrh. But when the swelling subsides, the tube may become open again.

The dilatation of the tube into a cyst is the final stage of salpingitis. The tumour formed by a dilated tube is seldom larger than a pear, although now and then larger tumours are seen. I have seen a pyo-salpinx reaching to the umbilicus (Fig. 79). As the distended tube enlarges, it opens

* *See* Doran, "Obst. Trans.," vol. xxxi.

up the meso-salpinx, so that it comes to be nearer the ovary than normal, and is generally adherent to it. The tube is commonly contorted, winding round the upper and back part of the ovary, so as to be retort- or pear-shaped, the outer part of the tube being the more dilated. A dilated tube is often constricted by adhesive bands, so that its cavity is divided into two or more compartments. The wall is generally thickened, but at one or more spots it may be thinned, thus causing danger of rupture. The thinning is not always due to tension, but may be due to ulceration,* and this ulceration may take place at a part where the tube is not dilated, and may perforate and cause death. The mucous membrane is injected, and shows the appearances of chronic inflammation, as described under pachy-salpingitis, except that when the tube contains pus, the inflammation being more severe the mucous membrane is infiltrated with leucocytes.

What may be called a cold abscess of the tube is sometimes seen; that is, a tube full of inspissated pus, but presenting no sign of acute inflammation.

Hydro-salpinx may be due to slight inflammation. The tube is generally thinned, so that its wall gets translucent. The adhesions which fix it are usually thin and few (Figs. 80, 81). Dr. Clement White† has brought forward reasons for thinking that hydro-salpinx is often due to retention of secretion owing to congenital closure of the fimbriated end: being thus pathologically allied to hydrocele. Clinically it resembles a small ovarian cyst, but is attended with more pain. Most operations for the removal of hydro-salpinx are done under the belief that a small ovarian cyst is present. Such specimens require careful examination to distinguish them from tubo-ovarian cysts; and probably some of them become tubo-ovarian cysts. I have seen the wall of a tube containing serous fluid greatly thickened.‡ A hydro-salpinx is seldom much larger than an orange; but Cullingworth§

* *See* Lewers, "Obst. Trans.," vol. xxvii. p. 298, and Cullingworth, "Obst. Trans.," vol. xxx. p. 406.

† "Journal of Obstetrics and Gynæcology of the British Empire," March, 1903.

‡ *See* "Obst. Trans," vol. xxxiii.

§ "Diseases of the Fallopian Tube," 1895.

has removed one containing 32 oz. of fluid. From the fact that hydro-salpinx is not seen in old women, Bland-Sutton* infers that it is often spontaneously cured either by rupture or by atrophy.

Hæmato-salpinx.—The most common cause of hæmato-salpinx is tubal gestation. It is sometimes due to inflammation—*salpingitis hæmorrhagica*—but we know not the special causes that produce this form of inflammation. Landau and Rheinstein† have published a case of absence of the vagina without hæmatometra, but with double hæmato-salpinx. It has been said (reasonably, I think) that in this case the tubes were not healthy, and that therefore the case does not prove that the tubes bleed in healthy menstruation. Mr. C. J. Bond‡ has examined cases in which healthy Fallopian tubes were removed along with uterine or ovarian tumours. In patients who were menstruating, he found that the tubes contained a mixture of mucus and blood, and that the villous processes of the tubal mucous membrane were swollen and infiltrated with leucocytes. These conditions were not found in the tubes of women who were not menstruating, and their tubes contained only mucus. But such bleeding, in a healthy state of the tubes, leads not to their dilatation; the blood either flows into the uterus, and escapes by the vagina, or possibly flows into the peritoneum, where it is absorbed.

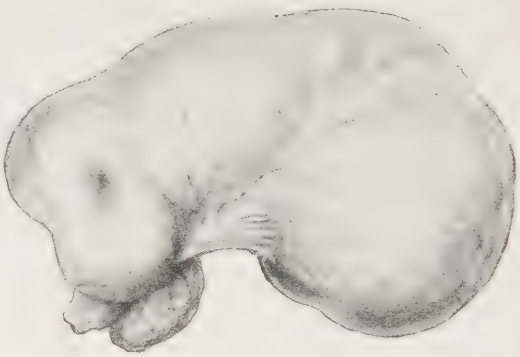


Fig. 80.—Hydro-salpinx. (*After Cullingworth.*)

* "Surgical Diseases of Ovaries and Fallopian Tubes," 1896.

† "Arch. für Gyn.," Band xlii

‡ "Brit. Med. Journal," June 4, 1898.

Relation of hydro-salpinx and hæmato-salpinx to pyo-salpinx.—The tube may be filled either with serous fluid, pus, or blood. There is reason to think that they may become changed, one into the other, during the progress of the illness. Thus in a tube filled with pus, after the acute inflammation has subsided, the pus may separate into a serous fluid with a cheesy layer lining the wall of the sac, and thus pyo-salpinx become hydro-salpinx. Again, hæmorrhage may take place from the mucous membrane of a tube filled with pus, and thus pyo-salpinx become hæmato-salpinx. On the other hand, Lawson Tait and others think that hydro-salpinx may suppurate and become pyo-salpinx, basing this view on the frequency with which hydro-salpinx is found on one side, pyo-salpinx on the other. Hæmato-salpinx may undoubtedly suppurate.

Fig. 81. - Hydro-salpinx. (*After Cullingworth.*)

Ovarian hydrocele.—Mr. Bland-Sutton* has described what he calls *ovarian hydrocele.* In this condition the tube opens by its abdominal ostium into a cyst. The ovary normally lies in a recess behind the broad ligament, in a pouch of peritoneum sometimes deep enough to receive and conceal the whole ovary, sometimes only a shallow depression. The fimbriated end of the tube falls over the mouth of this recess, and covers and conceals the ovary. In some animals this pouch is a complete sac, excluding the ovary from the peritoneal cavity. When adhesions form around the end of the tube and the ovary, this sac is very apt to get shut off, and converted into a cyst into which the tube opens, while the ovary is outside it, projecting into its cavity. Such a cyst may contain serous fluid, and this fluid may escape into the uterus by the Fallopian tube. Such a condition Sutton believes to be present in most of the cases described as *hydrops tubæ*

* "Brit. Med. Journ.," Feb. 21st, 1891.

profluens. He thinks it rare for simple hydro-salpinx to empty itself into the uterus. (I follow not his reasons for this view.) The space described may also contain pus. It is not possible clinically to distinguish a collection of pus in such a cavity from a pyo-salpinx, or a suppurated small ovarian cyst. An ovarian hydrocele can be emptied, but not removed.

Adhesions.—Some of the effects of pelvic adhesions have been thought very important. A description of the common kind of adhesions may make your conception of the disease clearer.

(*a*) **The uterus.**—This may be fixed by adhesions. Fixation has been thought important.* It is in most cases of no consequence in what position a uterus which is otherwise healthy is fixed. In such cases there are symptoms, not because the uterus is fixed in a bent position, but because it is fixed by inflammation. The uterus may be adherent to bowel, or omentum, or both. The adherent bowel is usually the ileum near the ileo-cæcal valve; but the sigmoid flexure may be adherent. Douglas's pouch, or the vesico-uterine pouch, may be filled up by adhesions. The uterus may be as if glued to one side of the pelvis, being adherent to its appendages and they to the pelvis. Halliday Croom † has published a case in which a Fallopian tube with its walls thinned and containing old blood clot, lay free in Douglas's pouch, without attachment of any kind.

(*b*) **The tube.**—When enlarged by inflammation, the tube is directed more backwards than usual; its upper surface comes to look inwards and downwards. The ampulla of the tube becomes adherent to the uterus and to Douglas's pouch. If both tubes are affected, they are often adherent to one another in Douglas's pouch. The tube is usually adherent to the posterior fold of the broad ligament, and above, often to bowel and omentum. The vermiform appendix is seldom adherent to the tube, but the left tube is often adherent to the sigmoid flexure and to the rectum.

Symptoms.—Salpingo-oöphoritis cannot be diagnosed from the symptoms alone without examination. All the symptoms

* *See* Schultze on "Uterine Displacements," trans. by Macan.

† "Edin. Obs. Trans.," 1896-7, p. 35.

may be caused by other diseases. Sometimes there are no symptoms. I have known pyo-salpinx and hydro-salpinx to exist without any symptoms. But this is exceptional.

There is *pain,* generally referred principally to one ovarian region, the left more often than the right. This is sometimes a dull, steady, aching pain, sometimes a severe paroxysmal pain; sometimes, and more often, both kinds of pain are present. It is lessened slightly by lying down, but the relief is not great or immediate. It is aggravated by exertion, by defæcation, and by sexual intercourse, in the latter case the pain lasting an hour or two, it may be, after the act. The amount of pain is not in proportion to the size of the tumour felt.

Menstruation is generally profuse, irregular, and painful. Rosthorn* noted severe menstrual pain in about a fourth of his cases. The hæmorrhage has been by some regarded as an effect of the disease of the appendages; by others as a result of the endometritis which by extension produced the tubal disease. In support of the latter view is the fact that in tubercular salpingitis there is usually amenorrhœa.

Frequent micturition and pain in micturition are common. The former is either a reflex effect of the disease, or is due to congestion of the bladder and urethra. The pain may be due to the movement of the inflamed parts which accompanies the distension and emptying of the bladder.

There is often pain in defæcation, because the straining causes movement of the tender parts. The flow of blood to the pelvic vessels causes congestion of the rectal mucous membrane, and thus leads to some hæmorrhage and mucous discharge from the bowel. Rosthorn found bladder and rectal symptoms troublesome in about one-fifth of his cases.

The presence of any long-continued illness, attended with persistent pain and with anxiety as to the future, causes the general health to suffer. This, together with the reflex influence of the uterus and ovaries on the stomach (as seen in the vomiting of pregnancy, and that often produced by the expansion of a tent, or by pressure on a tender ovary), leads to loss of appetite, nausea or vomiting, flatulence, constipation.

* "Arch. für Gyn.," Bd. xxxvii.

Prolonged pain and anxiety interfere with sleep, and thus the symptoms of neurasthenia become combined with the local ones — sleeplessness, headache (either the vertical headache characteristic of nervous exhaustion, or the ordinary slight migraines to which women are subject, increased in frequency), low spirits, perhaps hysterical seizures, giddiness, inability to concentrate attention, neuralgic pains.

There is usually wasting, but not great emaciation. There may be fever, but a normal temperature does not exclude suppuration. This I have repeatedly found. It has been emphasised by Cullingworth.* If the tubes on both sides are closed, there is sterility.

Diagnosis.—While perimetritis is acute, it is not possible to make a closer diagnosis than that there is pelvic peritonitis. To go further, you must wait until tenderness is so far diminished that bimanual examination is possible.

When you are able to examine bimanually, you may find (1) that what (felt by the vagina) seems to be a lump fixing the uterus is really only a sheet of thickened peritoneum; that the uterus is the only lump that can be grasped between the hands; and that on each side of the uterus there is nothing but thickening and stiffening of the parts. If this is the condition, with time and rest complete recovery will take place. The thickening will get less and less as months go on, and at length the traces of the disease will become so slight that one examining the patient for the first time will find it hard to say that any morbid change is or has been present.

(2) On examining bimanually, you may find that there is a lump behind and at the side of the uterus, either on one or both sides; or the lumps may be so large that they meet in the middle, and so feel like one lump. Such a lump is generally the inflamed tube and ovary fixed by adhesions If the lump is not bigger than a large walnut, pachysalpingitis may be the principal morbid change. If it be larger than this, and after a month's expectant treatment neither has the tumour got smaller nor the symptoms improved, there is probably a collection of pus. There is no way of telling before operation whether the lump

* "Obst. Trans.," vol. xxxiv.

contains pus or not, except by its size and the persistence of the symptoms. Cullingworth, in a series of fifty cases of abdominal section for recurrent peritonitis, found pus present in three-fifths. These operations were done because peritonitis had recurred, not because long expectant treatment had failed. A group consisting only of cases of perimetritis, in which after long expectant treatment a pelvic tumour persisted, would show suppuration in a larger proportion. The suppuration is in the tube twice as often as in the ovary. In some cases it is in both, and in some in the peritoneum around (Fig. 82). When there is a lot of pus, the condition is called a perimetric abscess. It is not possible to be certain before the abdomen is opened whether the tumour suspected to contain pus is ovary or tube. Tubal inflammation is generally bilateral, for the infection usually comes from the uterus, and each tube has an equal chance of getting infected. If there is a large tumour on one side only, it is probably a diseased ovary, but this is not certain, for tubal disease is sometimes one-sided.

Fig. 82.—Showing suppurated ovary associated with salpingitis. (*After Cullingworth.*)

Difficulties in diagnosis.—A fixed lump remaining after an attack of pelvic peritonitis is in nine-tenths of cases composed of inflamed tubes and ovaries. In the remainder other conditions, difficult of diagnosis, may be present.

1. A *fibroid*, growing from the back and side of the uterus, and fixed by peritoneal adhesions, may be difficult to tell from a lump due to inflammation of the appendages. Distinguish by (*a*) the greater hardness of the fibroid; (*b*) its oneness with the uterus; there is no sulcus between them, and movement given to the one is imparted to the other. Diagnosis may be impossible, because pachy-salpingitis is

sometimes very hard (being in fact fibrous tissue, like the tumour), and dense adhesions may prevent a sulcus from being felt between it and the uterus. Menstrual changes are valueless in this diagnosis, because (*a*) only a sub-peritoneal fibroid, which does not affect menstruation, could be taken for inflamed uterine appendages; and (*b*) uterine disease which causes tubal disease, sometimes makes menstruation profuse. The sound does not help us, for a fibroid such as could resemble an inflammatory lump would not materially alter either the direction or the length of the uterine cavity.

2. *A cyst in the broad ligament*, with pelvic peritonitis, may be indistinguishable from salpingo-oöphoritis. I have known such cysts accompanied with severe pain. Such cysts are so close to the uterus that they seem one with it. The mistake is not important, for the removal of such tumours is the proper treatment.

3. *Intra-peritoneal hæmatocele.*—A lump of clotted blood round the end of a Fallopian tube feels like a lump due to salpingo-oöphoritis. The conditions can be distinguished from one another only by the clinical history. Intra-peritoneal bleeding is usually connected with tubal pregnancy, and is therefore preceded by some symptoms of early pregnancy; it comes on with sudden pain and feeling of faintness, and with it there is usually hæmorrhage by the vagina accompanying the separation of the uterine decidua. It is rarely preceded by a history of pelvic inflammation. If the hæmorrhage is due to pelvic peritonitis, or if an effusion of blood in or around the tube has suppurated, both of which are rare events, the case cannot be distinguished from one of salpingo-oöphoritis.

4. *Malignant disease of the ovaries* at a certain stage of its growth forms lumps feeling like inflamed uterine appendages. But it is almost always secondary, in which case the presence of primary cancer elsewhere will suggest the nature of the peri-uterine lumps. If primary, and examination is made before peritonitis has occurred (which can seldom be done), the absence of a history of acute illness will prevent the diagnosis of salpingo-oöphoritis from suggesting itself. Later, if the case is watched, the

tumour will be found to grow fast, to invade the cellular tissue, to be accompanied with cachexia, ascites, and œdema of legs.

5. *Cancer of the Fallopian tube.*—This may be either primary or secondary. Secondary cancer of the tube is generally an extension of cancer of the body of the uterus. It is not common, and occurs late, so that when it is present there are often adhesions and extension of growth elsewhere, such as to make removal impossible. It is possible that cancer of the Fallopian tube co-existing with cancer of the uterine body may be the primary disease, for cases have been described in which it was hard to say whether the tubal disease was primary or secondary.

The practical rule which these facts point to is this. In a case of cancer of the uterine body, in which the uterus is so movable that its extirpation seems practicable, if there be any thickening of the Fallopian tube, the uterine appendages should be removed along with the uterus.

Cancer of the Fallopian tube may be secondary to cancer of the ovary. In this disease the tube is involved late, if at all. I know not how you are to find out that the tube is involved; and seeing that the tube does not become affected till late, it would make no difference in prognosis or treatment if you could find it out.

6. *Primary cancer of the Fallopian tube* is very rare. Doran,* our chief authority upon the subject, has with great labour collected over sixty cases. It begins as a warty growth. Doran thinks that a simple papilloma (that is, one showing no signs of malignancy) may in its growth become cancerous; that these papillomatous growths tend to develop in tubes which have been the subject of inflammation; and hence that cancer may be a distant sequel of salpingitis. Cancer may occur in normally developed tubes, or in tubes the ostium of which opens into a cyst. Doran quotes three of the latter to sixteen of the former. These numbers seem to me not large enough to permit us to draw any general conclusions as to differences between the two groups of cases.

Tubal cancer is unknown in youth. Its diagnosis is very

* "Journal of Obstetrics and Gynæcology of the British Empire," vol. vi.

difficult, sometimes impossible. All that can be said about it is that if when a subject of chronic salpingo-oöphoritis gets to the menopause, there comes an aggravation of both subjective and objective symptoms—increase of pain, wasting and watery or sanious discharge—cancer of the tube may be suspected. In such a case the removal of the diseased tube, the uterus, and the opposite tube is the only treatment. I know of no way in which before removal and examination of the tube the diagnosis can be made. Even after the tube has been removed, the diagnosis is not always certain. Thus in a case of Kaltenbach's, no cancer was detected by the microscope, but the disease recurred after removal; and in another case by Veit the diagnosis of cancer was made by the microscope, but the patient remained in good health seven years afterwards.

7. *Unilateral hæmatometra.*—In a bicorned uterus the cervical canal leading to one cornu may be absent, and yet the imperfectly-developed cornu may menstruate, and the blood be retained in the half uterus. The tube may also be full of blood, so that you have unilateral hæmatometra and hæmato-salpinx. Such cases are rare. Cases in which pregnancy has taken place in an imperfectly developed cornu are, in literature at least, commoner. If blood is retained, the mucous membrane is probably too much damaged by pressure to permit chorionic development. These cases cannot be clinically distinguished from salpingo-oöphoritis. Such one-sided retention may be present in a woman who has menstruated regularly and had children Sänger claims to have diagnosed the condition before opening the abdomen, but I think rather by a lucky guess than by irrefragable induction.

8. *Myoma of the Fallopian tube.*—I speak of these tumours here because I know not where else to place them. They are very rare. The wall of the tube contains muscular tissue like that of the uterus, but less of it; therefore it is not surprising that similar new growths should be found in the tube, but less frequently. The largest indubitable specimen on record has been described by Bland-Sutton, and was of the size of a Tangerine orange. Larger ones have been reported by others, but may possibly have

been uterine. A hard, movable, painless lump, stationary in size and in close connection with the uterus, may be safely diagnosed as a fibroid. I know not how, with the belly unopened, you are to ascertain that such a tumour is seated on the tube; and I know of no case in which such a tumour caused enough trouble to warrant abdominal section.

9. *Morbid conditions of the tube of unknown pathology.*—I mention these to complete the sketch I have given of the morbid conditions of the tube, not because they are important. (*a*) Small semi-transparent bodies, looking and feeling like cartilage, are sometimes found on the fimbriæ of the tube. They are neither cartilage nor bone, but are in their centre structureless, with at their periphery connective tissue rich in large round cells. We know nothing about their origin or significance. (*b*) I have mentioned that calcareous granules may sometimes be felt in the mucous membrane of an inflamed tube. Such calcareous matter may be aggregated into a lump, forming a tubal calculus. This is a consequence of long-continued inflammation, but we know not how to diagnose it, nor can we draw any inference from the presence of a tubal calculus. (*c*) With uterine fibroids irregular yellow bullæ are sometimes seen on the peritoneal surface of the tube. These are not true cysts, but dilated lymphatics. They are not important. (*d*) Small cysts are sometimes seen on the mucous membrane of the tube within the ostium. Their import is unknown. (*e*) Lipoma of the tube; that is, masses of fat between the layers of broad ligament close to the tube, and even pedunculated bits of fat hanging from the fimbriæ, have been seen. They have no clinical importance. (*f*) Dermoid tumours of the tube have been reported; but in all the tube and ovary have been so closely connected that it was impossible to be certain that the dermoid was not ovarian.

10. *Rare cysts of the tube.*—The "*hydatid of Morgagni*" is a pear-shaped cyst hanging from one of the lower fimbriæ of the tube; it is the remains of the blind end of the duct of Müller. This cyst may be pathologically enlarged. Doran has seen it as large as a William pear. Its wall may be considerably hypertrophied, and may undergo calcareous degeneration. Such enlargement of the hydatid of Morgagni

has only been observed when the adjacent structures were diseased; never as a morbid condition existing by itself. A unique case has been published by Sänger, in which a group of cystic tumours, fibro-myxomatous in structure, sprang from the fimbriæ of the tube. When cysts of this kind are associated with salpingo-oöphoritis, I know not how they are to be distinguished from the commoner cystic enlargements of the tube and ovary.

11. *Sarcoma of the tube.*—Cases of sarcoma of the tube have been described, but in many of them the evidence is insufficient to convince a critical reader that the disease was of this kind; that the condition was neither carcinoma, nor thickening of the tube by chronic inflammation, nor a result of tubal pregnancy. It is certain that sarcoma of the Fallopian tube is very rare; that at present it cannot be diagnosed; that if disease be discovered which is reasonably suspected of being sarcoma, it should be removed.* Two cases of *deciduoma malignum* following tubal pregnancy have been described. This disease will be more fully described in another chapter.

Prognosis.—When, after acute perimetritis has subsided, a tender fixed lump is felt in a posterior quarter of the pelvis, you cannot at the outset go beyond a certain point in diagnosis. You cannot tell whether there is pus or not, you cannot tell whether the pus, if present, is in the ovary, or tube, or the peritoneum around them. In considering the prognosis, you must consider the different conditions that may form the lump, and the events that may happen, for prognosis governs treatment. Given, then, a lump diagnosed as inflammation of the uterine appendages, what may happen? Six terminations are possible.

1. *Perforation.*—There may be an abscess which may perforate into the peritoneal cavity. Such perforation is rare in chronic cases, because chronic inflammation leads to the tubes being thickened and surrounded by adhesions, which, if the tube should be perforated, shut off inflammatory products from the general peritoneal cavity. Perforation of a Fallopian tube, or an ovarian abscess, is not bursting from over-stretching; it is perforation by ulceration. It

* *See* Doran, *op. cit.*

occurs in acute cases: often in salpingitis that has produced so few symptoms that the existence of a morbid process in the Fallopian tube was not even suspected.

2. *Lardaceous disease.*—The lump may be an abscess, which may burst into the bowel, or bladder, or vagina, and then go on discharging indefinitely, and ultimately produce lardaceous disease. The conditions in which this happens have been discussed in the chapter on perimetric abscess. It is a rare consequence of a lump such as could be diagnosed as inflammation of the uterine appendages, but it is a possibility.

3. *Absorption.*—The bulk of the lump may be serous exudation, the tubes and ovaries being very little diseased, If this be the morbid condition, then if the patient be placed under favourable conditions, the serum will in time be absorbed, congestion and œdema of the tubes and ovaries will subside, and adhesions will get looser and thinner; and as these changes go on, the lump will get smaller, softer, less definite, and at length no lump will be felt. These cases are not common, but they are commoner than those which lead to the two previously described terminations.

4. *Disappearance of symptoms, but not of lump.*—When there is great thickening of the tube, with dense adhesions round it and the ovary, if the patient is put under favourable conditions, the pain will gradually get better, the intervals of freedom from pain becoming longer, and the attacks of pain shorter and less severe; and the pain may at length cease altogether. But, as the lymph has become organised into fibrous tissue, the lump does not go. The uterus remains fixed, and a hard lump may be felt beside it for years afterwards, although the patient remains well. If she is not exposed to any influences likely (*a*) to set up pelvic peritonitis, (*b*) to lower the tone of her nervous system, she may remain well for the rest of her life, in spite of the lump in her pelvis. This is a frequent termination. If the lump is on one side only, she may become pregnant. If so, the vascular development of pregnancy will make pelvic adhesions become looser and softer, so that the lump may neither cause abortion nor hinder delivery.

5. *Recurrence.*—Often the patient gets well under treatment. But the damaged parts are more apt to become inflamed again from slight causes than they were before the illness. Then the patient gets recurrences (*a*) of pelvic peritonitis and (*b*) of pelvic pain without evidence of acute disease. This is the most frequent course of peri-salpingo-oöphoritis.

6. *Persistence.*—In some cases, especially those in which there is cystic suppuration, no amount of expectant treatment relieves, but the symptoms persist indefinitely until the disease is cured by operation.

The most difficult, and yet the essential point in the diagnosis of these cases, lies in the distinction between perimetritis with enough serous exudation to form a tumour, but without chronic disease of the tubes, and perimetritis with chronic salpingo-oöphoritis. The former always ends in recovery and never requires operation. The latter will generally get well without operative treatment, but sometimes can only be cured by operation. In cystic salpingo-oöphoritis with large pus cavities, operation is necessary, but in pachy-salpingitis it is seldom required. Therefore it would be an enormous gain if we could distinguish between the cases in which the diseased parts contain cavities full of pus and those in which there is mere thickening; but this at present we cannot do without watching the effect of expectant treatment.

Treatment.—I have described the expectant treatment of perimetritis. When the diagnosis of inflammation of the uterine appendages has been made, this treatment must be continued until either the patient is well, or operation is decided upon. The essential of expectant treatment is *rest*. It is harder to get the patient to keep at rest in this chronic disease than in the acute diseases described in the previous chapters. Chronic inflammation of the uterine appendages does not make the patient quite unable to fulfil her social and domestic duties, although it greatly lessens her usefulness, and makes the discharge of such duties painful. Therefore such patients often try to ignore their sufferings and struggle against pain. When there are no physical signs and the pain is neurotic, such a frame of

mind should be encouraged, but in such patients it is seldom present. But when the pain is clearly inflammatory—when it dates from an acute illness and there is a tender lump in the pelvis—you must insist on *rest*. Your success in avoiding operation will depend on persistence in this. Physical rest can be, theoretically, observed as well on a sofa as in bed. But if the patient is in a day room, with her family, things are sure to happen in her sight or hearing which will disturb her and make her exert herself. Therefore insist on bed. Use counter-irritation, as in perimetritis. Give laxatives rather than let the bowels be costive. A hot douche keeps the vagina clean, and often seems to relieve pain, therefore advise it once or twice daily, according to its effect. If it does not relieve and there is no vaginal discharge, discontinue it. Avoid vaginal manipulations. Give tonics if appetite is poor. Forbid alcohol, unless you find that a little light wine with meals helps the patient's digestion. If the patient is restless at night, lessen nervous irritability by giving gr. x. or gr xv. of sodium bromide three times daily, not continued for longer than two or three weeks. Avoid hypnotics; the disease may be very chronic, and if you get the patient into a habit of depending on a hypnotic, you will have given her a disease almost worse than the one she has. If relief to pain is urgently needed, opium is the most effective and the least objectionable analgesic. But these things, so far as their effect on the disease is concerned, are mere trifles in comparison with *rest*. If the patient cannot get thorough rest at home, and is of the hospital class, send her into hospital. If above this class, send her to a private surgical home, or to a friend's house in which temptation to exertion will not be offered. But in these cases removal from home influences is not in itself an object, as it is in some neurotic cases; it is only desirable when it enables more complete rest to be got.

Result of expectant treatment.—In nearly all cases improvement will follow this treatment, and most will get well if the treatment is continued long enough. Many who recover will relapse; but, as a rule, the relapse will not be so bad as the first attack, and similar treatment will again

cure them. In a few cases, prolonged expectant treatment does not relieve; in a few others, relief only lasts a little while, and when relapse occurs the symptoms are as bad as before treatment. These are the cases in which an operation has to be thought of.

What is a fair trial of expectant treatment?—Most cases will get well within two months. But I have seen expectant treatment followed out for two months without relief, and then the patient has begun to improve. I therefore think that three months is the minimum which in doubtful cases should be considered a fair trial of expectant treatment. This is only a statement as to most cases, not a rule to be applied to every case. (*a*) If the lump is large enough to rise above the brim, or to displace the uterus, and there is persistent pain and wasting, three months is too long to wait. A lump due mainly to serous exudation, or formed of effused blood, will lessen in size within a fortnight. If a large lump is not smaller at the end of a month's expectant treatment, it may be assumed that longer treatment will not remove it. If the lump diminishes in size, or if it be so small that it is difficult to be certain as to variation in size, wait. A lump of suppuration, or a tumour, may be surrounded by serous exudation, so that diminution in size does not negative the presence of one of these conditions. (*b*) If at the end of three months' treatment the lump is small, nutrition not affected, and the only indication for different treatment is pain, the pain is probably neurotic. Watch the case carefully before you sanction operation. Some such patients can be frightened into good health by a description of the operation, with exaggeration of its danger.

Why difference of opinion as to necessity for operation.—There has been much difference of opinion about the proper treatment of diseases of the uterine appendages. Patients successfully treated continue to put confidence in the person who treated them, while those in whom a particular treatment is a failure try to find better advice elsewhere. Hence operators hear of their successes oftener than of their failures, while those who do not operate lose sight of patients whom the operator cures, but are consulted by those dis-

satisfied with the results of operative treatment. Hence difference of opinion more marked than is accounted for by the difficulty of rightly estimating the evidence. Some cases of chronic inflammation of the uterine appendages are incurable in any other way, and if these could be diagnosed, then an operation would be indicated as soon as the diagnosis had been made. But such precision of diagnosis at an early stage of the disease is not at present possible, and there are grave objections to this operation, which should lead you to avoid it if possible.

Surgical treatment.—If expectant treatment fails, surgical treatment is required. There are two routes by which the diseased parts may be reached: (1) the abdominal, (2) the vaginal. I place them in their chronological order. These diseases were practically discovered by abdominal section. They were known to pathologists who opened dead bodies, but were looked on as museum curiosities, which could neither be diagnosed nor treated, until Lawson Tait, by abdominal section in the living, demonstrated their frequency, and showed that they could be cured. The mode of cure which Tait introduced is—

1. **The removal by abdominal section of the ovaries and tubes.**—This is sometimes called "spaying"; but this word, as used before the introduction of Tait's operation, meant the removal of healthy ovaries. The abdominal mode of treatment has the advantage, that by it the parts are exposed to sight and touch, the diagnosis is made accurate, and treatment applied with precision. The complete removal of the uterine appendages on both sides must remove all troubles which the disease of these organs directly causes.

The objections are: (i.) **The danger to life.** This is slight when the operation is done by a skilful operator. Statistics of operators in every civilised country agree in showing this. I may refer to those of Lawson Tait, Cullingworth, Mayo Robson, Zweifel, Pozzi, and Polk, in illustration. But when done by an inexperienced operator, the danger is considerable. No one should attempt these operations who has not large opportunities of practice in abdominal surgery. I do not think it instructive to quote percentages, because the mortality depends partly on the selection of cases. One who

operates on cases with slight disease will get a low mortality; one who submits to abdominal section only serious cases will have a higher death-rate. Judging as well as I can, I estimate the mortality *in cases of suppuration* at about 8 per cent.* In the worst cases it is worth the patient's while to run the risk.

ii. **Does it cure pain?**—The operation cures painful disease, but it does not at once cure pain. If the disease is a suppurated ovary or tube, and this is removed, the disease is cured. But in cases in which persistent pain has been due to local disease, pain has persisted after removal of that disease. The proportion of cases not relieved of pain depends upon how the operator selects his cases. One who operates on many cases of pelvic pain with small pelvic lumps will remove many ovaries and tubes which are healthy except for a few adhesions. In such cases the pain is neurasthenic or hysterical, depends more on weakness of the patient's nervous system than on the local change, and is not permanently relieved by any operation. Cullingworth's cases† show only about 10 per cent. in which pain persisted, but in these the organs were only removed when they were seriously diseased.

iii. **Does inflammation never recur?**—One consideration which has led to the large performance of this operation is the theory that by stopping the functions of the generative organs, recurrence of pelvic inflammation will be prevented, and this will become as rare in such patients as in children and old women. Now, after removal of inflamed tubes and ovaries, *does inflammation never recur?* Upon this most important point some of the most experienced operators are silent. It seems never to have occurred to them as possible. But the fact is, that some patients come back months or years after successful abdominal operations with abscesses or inflammatory induration round the part to which a ligature had been applied. Whether this depends upon non-absorption of the ligature, or whether upon the entry of septic germs into the stump, we know not.

* See Cullingworth, "Obst. Trans." vol. xxxiv.; Aug. Martin, "Die Krankheiten der Eileiter"; and Albert Martin, "Resultats éloignés de l'ablation des annexes utérines par laparotomie." Thèse, Paris, 1893.

† "Obst. Trans.," vol. xxxiv.

iv. **Ventral hernia**; that is, protrusion of bowel through a gap between the recti. This may develop years after the operation. I have known ventral hernia first appear nine years after ovariotomy. When such a hernia has begun it tends to increase. Each cough or effort drives out more bowel, and thus through a gap little bigger than a button-hole, a hernia as large as a fœtal head may protrude. Hernias of this kind, if treated while the gap is small, can be cured. A ventral hernia is not so bad as a lump of suppuration in the pelvis; but it is a serious inconvenience, and an evil to be avoided if possible.

v. **Sinus formation.**—When a ligature is put round the healthy tissues that form the pedicle of an ovarian cyst, these tissues swell above and below the constriction, meet over and bury the ligature, which is then quickly invaded by leucocytes, which eat up it and any germs in it, and thus it is kept aseptic and finally absorbed. Now, if the stump be thickened by organised fibrous tissue, it does not swell up and envelop the ligature. The ligature is therefore not encapsuled, suppuration often takes place round it, and a sinus forms which goes on suppurating until the ligature has ulcerated through the stump and been discharged. Its separation takes months and may take years. This is a disagreeable consequence, and one to be avoided if possible.

We have no information about the frequency of these evils after the removal of inflamed uterine appendages by abdominal section. The early operators were satisfied if the patients recovered from the operation, and did not trace their after histories. The possibility of one of these unfortunate after-effects, though not a disadvantage grave enough to contra-indicate the operation in cases which cannot be otherwise cured, yet makes it desirable to cure these patients if possible without opening the belly.

vi. **Does salpingo-oöphoritis unsex the patient?**—One objection to complete extirpation of the tubes and ovaries is that it annuls the sexual functions. It is said in reply to this that the patient is "unsexed" already by her disease. But this is not the fact. The disease often produces dyspareunia and sterility, but not always. Even if sexual

intercourse be rendered painful, sexual desire and enjoyment may persist. I have seen several patients with inflammatory lumps in the pelvis who had been told by other advisers that the removal of the ovaries was necessary, and yet subsequently had children. In one case, in which I removed a pyo-salpinx on one side, and on the other side found the tube and ovary so embedded in adhesions that I could not identify them, the patient had a child within a year after the operation.

The operation.—The instruments and preparations required are the same as for ovariotomy, except that a trocar is not needed. The patient should be in the raised pelvis position. Details which are common to this and other abdominal sections I shall give in describing ovariotomy.

Open the belly as in ovariotomy, making the first incision only about two and a half or three inches long. This done, pass two fingers down into the pelvis, and feel for the fundus uteri. This identified, trace outwards with the fingers the uterine appendages, and break down with the fingers the adhesions fixing them. When you have freed them, pull them up to and out through the wound; transfix and tie the broad ligament in the same way as the pedicle of an ovarian tumour: and then cut away the diseased appendages as near to the ligature as is compatible with security against slipping of the ligature. This is eminently an operation that should only be undertaken by specialists. Skill in recognising the parts by touch, in breaking down adhesions, and liberating the inflamed parts, can only be acquired by practice on living patients the subjects of disease.

Its dangers.—The dangers of the operation are: (1) *Septic poisoning.* This is preventible (*a*) by antiseptic precautions, (*b*) by care not to damage the peritoneum unnecessarily, and not to leave behind in it dead organic fluid in which micro-organisms may find a soil suitable for their growth. (2) *Hæmorrhage.*—This may be (*a*) from the pedicle; (*b*) from torn adhesions. (*a*) Serious bleeding from the pedicle is not common. The pedicle contains no vessels so large as those in that of an ovarian cyst; but it is sometimes friable, so that a thin ligature tightly pulled may cut through it instead of compressing it. (*b*) Hæmorrhage from torn adhesions is

sometimes great. It may directly kill the patient, or be indirectly fatal, by filling the peritoneum with a quantity of dead blood too great for it to absorb, so that micro-organisms multiply in it and cause peritonitis. The magnitude of this danger depends upon the condition of the parts; and in this no two cases are alike. If there be only slight thickening of the parts, and a few old adhesive bands, the bleeding is next to nothing. With hæmato-salpinx, which implies great vascularity of the tube, bleeding is likely to be great. Much skill and resource are required to stop it. It is to be stopped, first, by looking for the bleeding-point, which in the raised pelvis position can be seen, and securing it if possible with pressure forceps and ligatures. But, sometimes, especially when the hæmorrhage is from surfaces which were adherent before the operation, the bleeding is from innumerable small points, and the tissue which bleeds is so firm that these points cannot be picked up. Such general oozing may be checked either by applying styptics, such as perchloride or sulphate of iron, or by pressure: stuffing the pelvis as tightly as possible with iodoform gauze. I think the latter the more effective (3) *Injuries to viscera.*—The adhesion between diseased uterine appendages and bowel may be tougher than the wall of the bowel, which will then be torn. If a drainage-tube be put in, so that fæces can come up through the wound, the patient may do well and the rent heal; for fæces, though irritating to the peritoneum, are not septic. The tear is generally low down, and the bowel fixed by adhesions, and if so to sew it up is impracticable. (4) *Intestinal obstruction.*—After an operation of this kind, fresh adhesions are always formed, and by them a kink in the bowel may get fixed and intestinal obstruction follow. No method of operating can prevent this. The only treatment is to reopen the abdomen and liberate the bowel.

What should be removed? Lawson Tait urged that as both tubes are equally exposed to the usual causes of salpingitis, and both usually diseased, the appendages on both sides should always be removed; for if on one side they appear to be healthy, it is probable that in time they will suffer, and inflammation recur. But inflammation sometimes

recurs after both have been removed. It is urged also that ovaries as well as tubes should be always removed, because even if the ovaries look healthy, there may yet be, and often is, suppuration in them as well as in the tubes. But it is possible to cut open the ovary, see if there be suppuration in it, and, if not, sew the cut surfaces together. It seems to me sounder surgery to remove diseased parts only, and leave healthy parts. Some have carried this principle further, and leave diseased parts.

Abdominal section with conservation of diseased parts.—Inflamed uterine appendages have been treated by opening the belly, treating the morbid condition found in the pelvis in the way that seems most likely to put it right, and shutting up the abdomen. Thus, if the tubes are adherent, the adhesions are broken down. (But fresh adhesions cannot be prevented from forming.) If the tube is closed, it is opened, emptied, and then scraped and cauterised, or part of it removed. If the ovary contains small cysts, these are cauterised.

These things cannot be done without risk to life and danger of ulterior evils, almost as great as those which attend removal of the appendages. A tube converted into a bag of pus with fibrous walls a third of an inch in thickness could not safely be treated in this way, nor could a suppurated ovarian cyst. Such treatment is only suitable for cases of slight disease. I find that these get well under expectant treatment. I know of no evidence that this conservative treatment cures slight disease any better than treatment which is free from the disadvantages of abdominal section.

2. **Vaginal treatment.**—This mode of treatment leaves no scar in the abdominal wall; and entails no risk of ventral hernia, or a sinus in the abdomen. There is less danger of general peritonitis, intestinal paralysis, and obstruction, because, in properly chosen cases, the general peritoneal cavity is not opened. In some cases it cures; and in properly chosen cases, if it does not cure, the patient is no worse for the attempt to cure in this way. The drawbacks to it are that in some cases it fails; that you cannot tell what structures you are dealing with so well as when the parts are exposed by an abdominal incision; and that if

the cases are not well chosen, there is risk of hæmorrhage and of septic infection. There are three methods of vaginal treatment.

(*a*) **Vaginal incision.**—The cases for this method are chronic cases in which there is a painful lump, the size of a Tangerine orange, or larger, fixed in Douglas's pouch. It should not be done in recently formed lumps, because (i) most such lumps as are recent will go away without it; and (ii) a recent lump may not be firmly adherent, and if so, the general peritoneal cavity may be opened, and drainage may be difficult. When the mass is already firmly adherent in Douglas's pouch, an incision into it will not make the condition worse. A vaginal incision should not be made when the lump is high up and at the side, for in such cases large vessels in the broad ligament will be cut into if the lump is attacked from the vagina.

Therefore, when you have to deal with such a painful lump, which after sufficient expectant treatment has not lessened in size, cut into it by the vagina. If in doubt as to diagnosis, tap it first with an exploring needle. Anæsthetise the patient. Put her in the lithotomy position. Wash out the vagina with sublimate solution 1–2000. Hands and instruments being surgically clean, cut through the posterior vaginal fornix with scissors, guiding them with the left forefinger in the vagina. Cut for about an inch and a half from side to side. This done, try to force your way on into the lump with the forefinger, cutting with scissors when you meet with tissue so dense that your fingers cannot break it open. If the lump contains pus, you will in this way get into the pus cavity. When this is reached, put in two fingers if possible, and tear as large an opening as you can. If any septa exist in the cavity, break them down in the same way, so as to lay every part of it open into the vagina. Keep your other hand on the abdomen, pressed down in the lump while you do this, so that you may know whether your fingers have reached the boundary of the lump or not. Having laid open the cavity, stuff it with iodoform gauze, so as to make it heal from the bottom, and at the same time keep it sweet. If the lump is a pyo-salpinx, or if it is a dermoid cyst, or an abscess in the peritoneum around

inflamed appendages, it will be cured in this way. If the lump should be an ovarian cyst, not a dermoid, an abdominal operation will afterwards be required; but the vaginal incision will not have made this more difficult or more dangerous.

Sometimes you will be able to lay open one cavity, but find this bounded by a wall which does not seem the outer boundary of the lump, but which is so firm that you cannot break it down. After two or three weeks, the cavity will have contracted, but a lump may still remain, although not so large as at first. In such a case, if you repeat the attempt a few weeks later, you will often find the wall of the remaining pus cavity so much nearer and so softened that you can open it by the vagina, and cure the patient.

If the patient can be cured in this way, she escapes the disadvantages of abdominal section.

(*b*) **Removal of the uterus by the vagina.**—Parisian surgeons have advocated and practised removal of the uterus to cure suppuration around it. They urge that the uterus is the source of evil, and the radical treatment is to treat disease at its source: if suppurated Fallopian tubes are removed by abdominal section, a stump is left, in which are germs, and to which, by the same route as before, fresh micro-organisms may get. By removing the uterus, a large gap is left between the suppurating cavities into which they can freely discharge, and which will not close up in a hurry. I find it possible to open collections of pus in the pelvis, and drain them by the vagina, without removing the uterus. Therefore I advise not this operation. Removing the uterus is more dangerous than incising a pus cavity; there is risk of hæmorrhage and of possibly incurable injury to ureter, bladder, or bowel.

(*c*) **Removal of inflamed appendages by anterior colpotomy.**—If the inflamed lumps are small, they may be removed by the operation devised by Martin, of Berlin, and called "anterior colpotomy"; that is, by opening the vesico-uterine pouch of peritoneum, as in vaginal fixation of a retroflexed uterus (see p. 165), and then with the finger breaking down the adhesions fixing the appendages, pulling these forwards through the vaginal incision, and removing them. By this method the disadvantages of an abdominal scar are

avoided; the other objections to the operation are the same. It is only suitable to cases in which the appendages are so little enlarged that the finger can be hooked over them. Not many such cases need an operation.

Removal of the uterus and its appendages by the vagina.—Landau went further, and urged, in cases in which there is bilateral suppuration of the uterine appendages, removal of the uterus, tubes, and ovaries by the vagina. If this is safely and completely done, it must cure such disease more thoroughly than any other application of surgery. The mortality in Germany and America has been small: no greater than that of removal of inflamed appendages by abdominal section. The danger of disagreeable after-consequences is less, and of failure to cure far less.*

When chronic salpingo-oöphoritis causes such suffering as to affect the general health, and is not cured by medical treatment, the best course when practicable is the removal by the vagina of the uterus and its appendages. Cases that require this are not common. If the tubes and ovaries are removed, the uterus is a useless organ, there is no benefit in keeping it, and inflammation may recur in the stump of the tubes.

The operation.—I shall describe vaginal hysterectomy in detail in speaking of cancer, the condition for which it is most often required. In these cases the first steps of the operation (freeing the cervix, opening Douglas's pouch and the vesico-uterine pouch) are the same as in hysterectomy for cancer. The next thing is, with two fingers passed up behind the uterus, to break down adhesions and liberate the uterine appendages. Those who have largely practised this operation say that it is not more difficult to do this by the vagina than by the abdomen, and the same dangers attend it in either case. When this has been done, the uterine arteries are secured. The cervix uteri is then freed laterally; the uterus is pulled down; its anterior wall is bisected, and the uterus is pulled outside the vulva. Then with two fingers passed up between the appendages and the pelvic wall, the

* Fauchet (*Gaz. Hebd. de Méd. et Chir.*, Feb. 18th, 1897), from an analysis of 257 cases, gives 64·5 per cent. of cures after abdominal removal of appendages; 94 per cent. after vaginal removal of uterus and appendages.

appendages can be pressed towards the middle line and the broad ligament tied externally to them. The uterine vessels may be secured with pressure forceps, in the manner shown in Fig. 83, but ligatures are better. Then the rest of the uterus and its appendages can be cut away. The after treatment is the same as that of hysterectomy for cancer.

The cases in which this method is not suitable are those in which the inflamed appendages form a swelling which is so large that its farthest part cannot be easily reached by the fingers in the vagina. Such a swelling cannot be easily manipulated from the vagina, and if on the right side the appendix may be part of it. In such cases I think the practice of some American operators of removing by abdominal section the uterus with its appendages is that which gives the greatest certainty of permanent cure. The methods and risks of abdominal hysterectomy I shall speak of in a subsequent chapter.

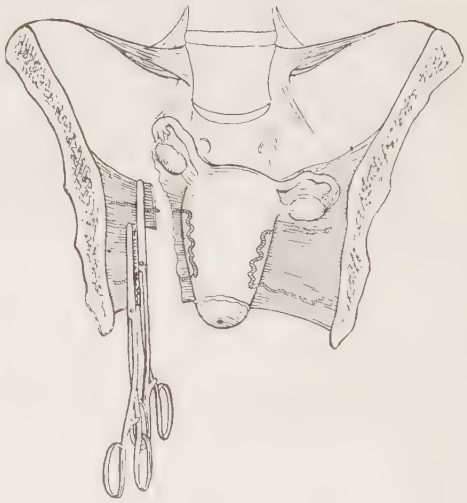


Fig. 83.—Application of pressure forceps in removal of uterus and its appendages by the vagina.

There are certain possible ulterior consequences of tubal inflammation which it will be convenient to describe here.

Proliferating salpingitis.—In tubes that have been long inflamed, new growth sometimes occurs in the mucous membrane. The name prefixed to this paragraph is at present the best to denote such cases, because it implies no theory. Our knowledge of such growths in the tubes is still so recent that the opinions even of those who have given most attention to the subject cannot be said to be yet established. Growths in

the tube have been seen in the circumstances and with the characters which I shall now describe.

What is the nature of the growths?—The mucous membrane of the normal Fallopian tube is folded. Mr. Bland-Sutton regards the recesses of these folds as glands. A mucous gland is nothing but an involution of epithelium. In the body there is seen every intermediate formation between a shallow depression which no one would call a gland, and a deep-branched recess which every one would admit to be a gland; it is not possible to define what depth of epithelial evolution ought to be called a gland.

Hence, whether the mucous membrane of the tubes is glandular or not is a question of words rather than of facts. In chronically inflamed tubes these folds have been seen much exaggerated, the processes separating the recesses longer and more branched than normal, but covered with well-formed columnar epithelium; so that except for the increase in size of the folds, and perhaps a little infiltration with leucocytes, the mucous membrane is healthy. The name proper to such a condition depends upon the view taken of the normal structure of the tube. If the tube is a large gland, then these reduplications of gland tissue are rightly called *adenomatous* growths. But if the tube is not a gland, then the correct name for the growths which fill it is *papilloma*, a name adopted by Mr. Doran.

Follicular salpingitis.—When this papillary or adenomatous growth has reached a high development, adjacent papillæ often adhere, and thus closed spaces or follicles are developed. This has been called "follicular salpingitis." This name is purely descriptive; it applies to some of the cases included in the foregoing group, but not to all of them. The cases in which such follicular spaces are produced have no clinical peculiarity that I know of. The condition cannot be identified until the tubes have been taken out of the body. There is no harm in the name as descriptive of an occasional effect of overgrowth of the mucous membrane of the tubes.

Papilloma of the tube with ascites.—There are rare cases, first described by Mr. Alban Doran, in which papillary growths in the Fallopian tube, without either clinical or

histological malignant characters, cause ascites. Either the diseased tube pours out more fluid into the peritoneal cavity than the peritoneum can absorb, or else it secretes some irritating matter which provokes the peritoneum to pour out fluid. The clinical features of such cases are that there is ascites, recurring after paracentesis, without discoverable cause other than the diseased tube, and cured by the removal of the diseased tube. In many such cases there is a history of past pelvic inflammation. Knowing that when the tubes are inflamed growth sometimes takes place within them, it is reasonable to regard with Mr. Doran these tubal papillomata causing ascites as late developments of papillomatous growths which began during salpingitis. We know nothing as to why some cases of salpingitis produce this effect, while most do not.

In these cases the swelling of the belly from ascites is the prominent symptom. By vaginal examination a lump is felt by the side of the uterus. Malignant disease may perhaps be suspected, but the absence of great wasting and of œdema of legs will be against this suspicion. The lump may be thought to be a fibroid, or a small ovarian tumour, or chronic salpingo-oöphoritis. Papilloma of the tube causing ascites is so rare that we have not yet obtained criteria by which to recognise its presence before the belly has been opened.

Correct diagnosis and proper treatment will follow if the good clinical rule be acted on—never to put a trocar into an abdominal collection of fluid of uncertain origin and nature. If it is necessary to let out such fluid, always do it by an incision, after making which you can put in your finger and explore. You will then find the diseased tube. I can give no signs by which to identify this rare condition by the touch. All that you can thus ascertain is that it is enlarged by disease of some sort; and as the fact that the tube is pouring out secretion into the peritoneum implies that at least its fimbriated end is free from adhesions, you will have little difficulty in bringing it up to the wound, which you should enlarge sufficiently for the purpose of inspection. This done, the nature of the disease will be evident, and the diseased tube should be removed.

In one of Mr. Doran's cases the fimbriated end of the tube

was closed and the uterine end open, and there was free watery vaginal discharge. In such a case the complaint would be of discharge, and not of ascites. By bimanual examination the diagnosis of tubal disease would doubtless be made. If you could make sure that the discharge comes from the uterus, and not from the vagina, it would be a proper inference that the tubal disease was accountable for the discharge. The disease is so rare that the only instruction I am able to give as to its diagnosis is theoretical, not based even on secondhand experience.

Papilloma of the Fallopian tube is not the only tumour which can cause ascites otherwise than by its bulk. With fibroma and with sarcoma of the ovary there is often ascites, although the tumour is so small that the dropsy cannot be accounted for by the mechanical pressure of the tumour, seeing that with fibroids of the uterus, ovarian tumours, and pregnancy, encroaching much more on the space within the belly, there is no ascites. Hence when there is ascites with a small pelvic tumour, papilloma of the tube is not the only possible explanation.

Salpingo-oöphoritis and the appendix.—The appendix vermiformis often lies very near the right ovary and tube. For this reason it is that when there is peritonitis on the right side of the pelvis the appendix is often involved. Hermes* has reported 75 consecutive operations for gynæcological disease in which he systematically examined the appendix in every case. He found a morbid change of some kind present in 40, or 53·3 per cent. He thinks it is much oftener the case that the gynæcological disease sets up the inflammation of the appendix than that disease of the appendix causes salpingo-oöphoritis. These figures point to the practical rule, thus formulated by Battle and Corner,† that "the appendix should be examined, and probably removed, in every case of right-sided salpingitis or pelvic peritonitis which comes to operation. The converse, that the right tube should be examined in the operation for appendicitis, does not seem so generally applicable. Still it is a good line of practice to follow."

* "Deutsch. Zeitsch. für Chirurgie," 1903, s. 191.

† "The Surgery of the Appendix."

CHAPTER XVIII.

PARAMETRITIS.

What is parametritis ?—Parametritis means inflammation of the cellular tissue of the pelvis, having its origin in the genital passage. Before the coinage of the word *parametritis* by Virchow, the disease was known as "*pelvic cellulitis.*" The latter term literally denotes a condition which may come from causes unconnected with the genital organs; such, for instance, as disease of bone or bowel. Inflammation from such causes, although pelvic cellulitis, is not parametritis.*

Distribution of the pelvic cellular tissue.—You cannot understand parametritis without accurate knowledge of the situation of the cellular tissue in the pelvis. The cellular tissue forms a sort of matrix in which the pelvic organs are embedded. It fills the lower part of the pelvic cavity, except where the three canals—urethra, vagina, and rectum—perforate it. Above it is covered in by the peritoneum. At the sides it is continuous with the subserous connective tissue. Through the inguinal and femoral canals it is continuous with the cellular tissue of the thighs, and through each sciatic notch with that of the buttock.

The muscles of the pelvic floor.—The cellular tissue contains the muscles of the pelvic floor as well as the aforesaid canals. The central point of the muscular system of the pelvic floor is the sphincter ani and perineum. From this part muscular tissue spreads out on each side like a fan to the periphery of the pelvis. (Fig. 84.) The muscles of the pelvic floor consist of (*a*) some comparatively unimportant prolongations of the uterine muscular fibre; (*b*) the levator ani; (*c*) some small perineal muscles. The levator ani is the chief one, and it forms a plane running from near the middle line upwards and outwards on each side, so that below it, between it and the pelvic wall, is a space, the ischio-rectal fossa, filled with cellular tissue.

* For information as to the diseases of the retro-peritoneal connective tissue generally, see "British Med. Journal," Oct. 17, 1896.

Distinction between the pelvic and vulvar connective tissue.—The muscles are enclosed in layers of fascia, which are closely blended with the pelvic canals. That which covers the levator ani is called the *deep pelvic fascia;* and this muscle with its fascia forms a fibro-muscular diaphragm, which separates what it is convenient to call the *pelvic,* from

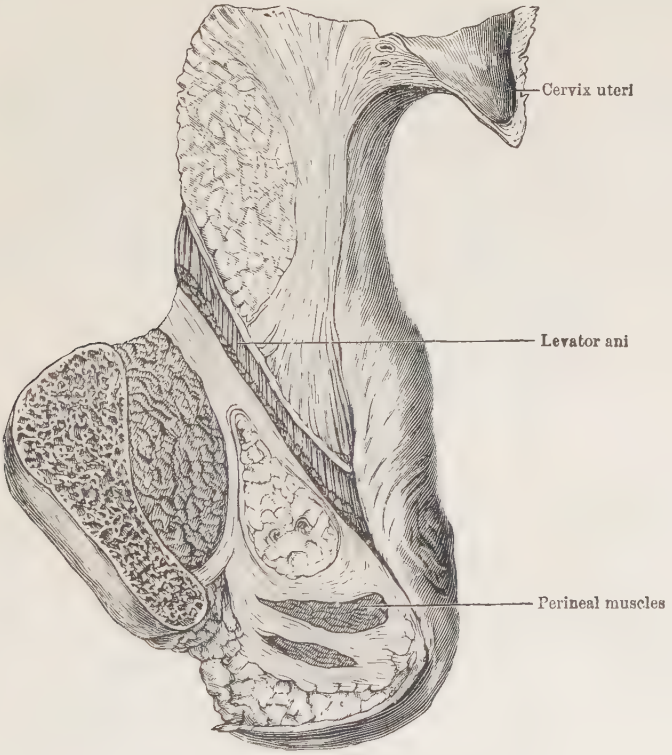


Fig. 84.—Muscular Structure of Pelvic Floor. (*After Freund.*)

the *vulvar* connective tissue. Hence it is that parametritis never, except where there has been injury to this fascia, spreads into the labia or into the ischio-rectal fossa. Nor does bleeding into the pelvic cellular tissue thus extend.

The pelvic cellular tissue.—Cellular tissue surrounds the uterus. Seen by itself, this cellular tissue would look like a hollow cylinder enclosing the uterus. Around the uterus it is close in texture, white and glistening in section. Behind

and in front of it the cellular tissue is comparatively scanty because the rectum and bladder are so close. Here the cellular tissue is gradually lost above, in the close attachment of the peritoneum to the uterus. There is more in front

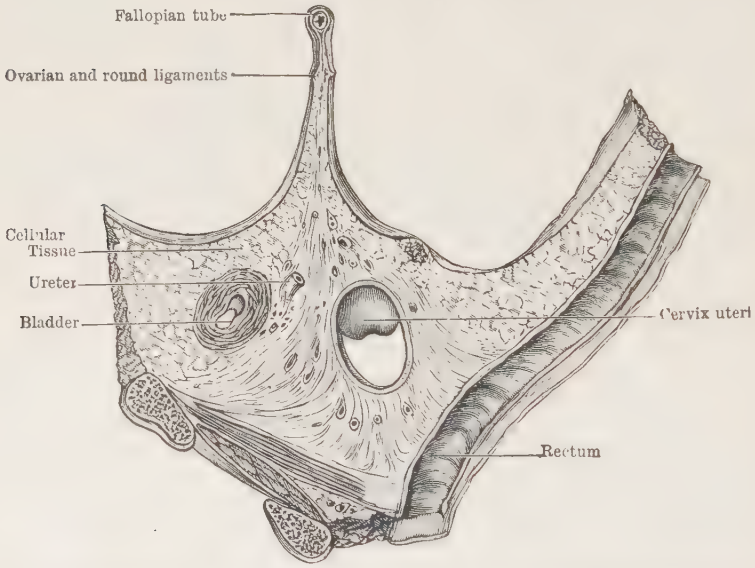


Fig. 85.—Section from before backwards, showing cellular tissue in broad ligaments. (*After Freund.*)

than behind. On each side the cellular tissue in the broad ligament forms a triangular mass, having its base below, diminishing in thickness from before backwards as it extends upwards, swelling out a little where the round ligament and the ligament of the ovary pass through it, and then ending like a gable below the Fallopian tube. (Fig. 85.) A horizontal section through the pelvis at about the level of the internal os shows a star-shaped thickening of the cellular tube. It is dense all round the uterus; and from this circle two limbs run back, one on each side of the rectum, embracing and supporting it; one on each side of the base of the bladder; and a broad one runs out on each side supporting the vessels, nerves, and lymphatics which go to the uterus. (Fig. 86.) The pelvic cellular tissue thus forms a continuous mesh of fibrous tissue extending from the endo-

metrium to the periosteum of the pelvic wall. The spread of parametritis depends upon the continuity of the cellular tissue.

Difference between the pregnant and the non-pregnant state.*—During pregnancy the cellular tissue in and near the broad ligaments is increased. At the sides the peritoneum is lifted up, so that at the end of pregnancy it leaves the uterus

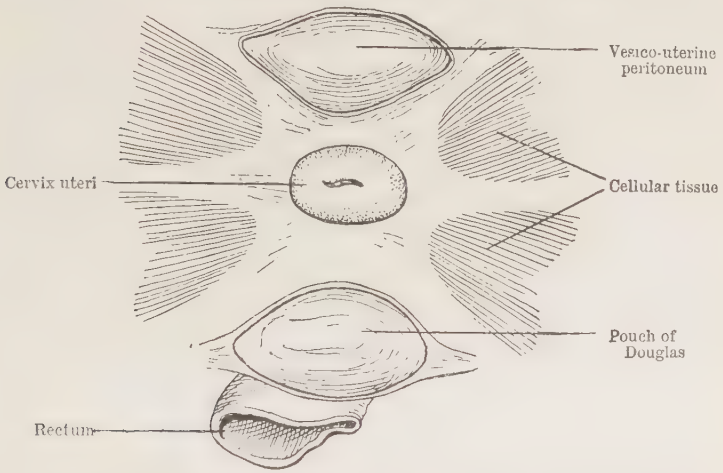


Fig. 86.—Horizontal section of pelvis at level of internal os, showing arrangement of cellular tissue. (*After Freund.*)

about an inch and a half above the pelvic brim. Hence at this time the base of the broad ligament might be described as being at the brim of the pelvis, stretching from the ilio-pectineal eminence to immediately in front of the sacro-iliac joint. There is a large triangular area at the sides of the uterus uncovered by peritoneum. The bottom of the vesico-uterine pouch, instead of dipping below the pelvic brim, is about on a level with it. Hence behind Poupart's ligament there is much loose cellular tissue which is not there in the unimpregnated state, and which is continuous with the cellular tissue at the sides of the uterus. (Fig. 87.) Upon this alteration in the anatomy of the cellular tissue during pregnancy depends a difference between the course of parametritis occurring after delivery and parametritis

* *See* Barbour, "The Anatomy of Labour." Edinburgh, 1889.

occurring in a patient not recently pregnant. In parametritis after delivery the inflammation usually spreads into the loose cellular tissue above the pelvic brim, and forms a swelling in the groin above Poupart's ligament. Parametritis in this situation is very rare in women not recently delivered.

The causes of parametritis.—Our knowledge of the causation of parametritis is based on inference and analogy,

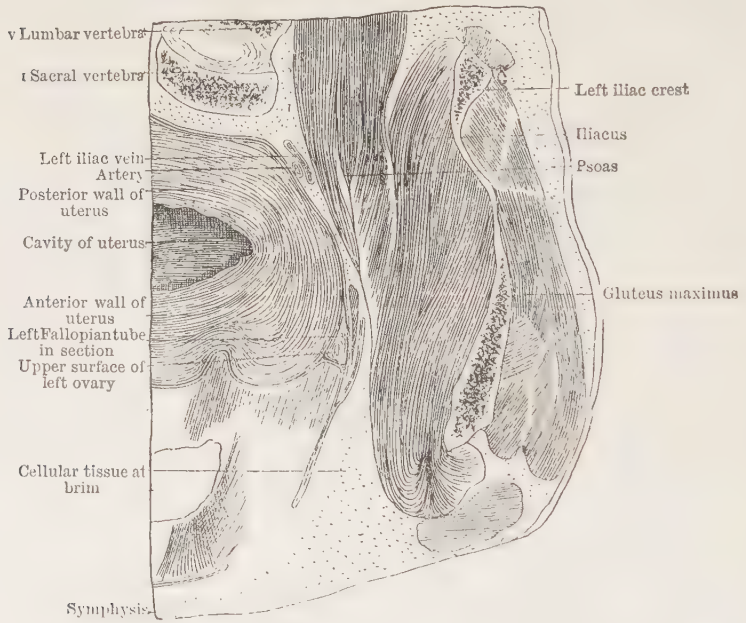


Fig. 87.—Section above brim of pelvis, showing cellular tissue above Poupart's ligament, continuous with that by the side of uterus. (*After Barbour.*)

not on exact observation. The commonly accepted theory is this. If a wound, say of the finger, is poisoned with very virulent septic matter, quickly fatal septicæmia or pyæmia is the result. But if the poison be less virulent, the result is lymphangitis of the arm and inflammation of the glands in the axilla. Cellulitis is so rarely seen except after a wound, that a surgeon meeting a case without a visible wound would generally conclude that there must have been some small puncture which had been overlooked. It is supposed that similar inoculations take place in the puerperal woman. If the poison be very virulent, the patient rapidly dies. If less

virulent, inflammation limited to the pelvic cellular tissue may be the result. This theory seems in harmony with experience. But I know of no direct evidence in its support. If correct, parametritis ought to be prevented by antiseptics, and to be common where antiseptics are not used. But I know of no facts on which to base an estimate of the percentage of deliveries followed by parametritis in the general population, or in lying-in hospitals, in pre-antiseptic times. The latter information cannot be got because women delivered in lying-in hospitals are generally discharged at the end of a fortnight; but parametritis may begin later than this, or at least not be discovered till later. Till we know how frequent the disease was without antiseptics, we cannot tell whether antiseptics have diminished its frequency or not. Another difficulty is that cellulitis following a wound begins soon: if it comes on late, after the wound has begun to heal, the surgeon assumes that there has been some interference with the wound. But the date at which parametritis comes on after delivery is variable: sometimes the patient says she was taken ill the next day, sometimes not till several weeks afterwards.

Various injuries—tears of the cervix, of the vagina, etc.—have had the responsibility for parametritis thrown particularly upon them; the evidence being that the propounder of the theory had observed this or that injury in some cases of parametritis under his own observation. But no one has shown that there is any particular injury which makes women who have sustained it more likely to have parametritis than those who have not had the injury. Nor is there any peculiarity in labour, or in childbed, or in their management, or (cases dependent on tubercle or cancer being excepted) in the health of the patient, which has been shown to be associated with any greater frequency of parametritis. It is rare except after labour or abortion.

Most cases of parametritis in non-puerperal patients come from injury to the cervix; such as deep incision for the cure of dysmenorrhœa (which often used to be done years ago), or tears of the cervix by rapid dilatation. In pre-antiseptic days it was often set up by tents. These facts make me think that injury to the cervix is probably the common cause of puerperal parametritis; but I know of no direct evidence to this effect.

Our knowledge of the causation of parametritis is incomplete so long as we are ignorant of its bacteriology But at present we know nothing about this; for as most cases get well, material for this study is difficult to obtain.

Cancer, either of uterus, ovary, or bowel, may grow into and inflame the cellular tissue. This parametritis is only an incident in the course of a much graver disease. Abscess in the cellular tissue may be caused by the tubercle bacillus. This is rare. We know not how or why the bacillus gets there.*

When bleeding takes place into the cellular tissue, some inflammation is excited around the effused blood. But this parametritis is less important than the bleeding which causes it.

There is no doubt that the causes I have mentioned produce parametritis. But in some rare cases no such cause can be found: there has been neither pregnancy nor operative treatment, nor is there any evidence of cancer or tubercle, and the patient has every sign of virginity. In such cases the patients often blame "catching cold," and some doctors accept this explanation. Pathological research is in all departments of medicine making us assign diseases once thought due to cold, to causes of a different kind. Parametritis from catching cold is, to me, parametritis the cause of which has not been found out.

Parametritis with perimetritis.—In the common cases of parametritis there is no perimetritis.† But very acute parametritis usually involves the peritoneum.‡ In inflammation of the tubes and ovaries, parametritis is often present. This may either be (*a*) from parametritis spreading into the ovary by way of the hilum, or (*b*) from the cellular tissue becoming inflamed by extension from the tube.

Morbid anatomy.—The first change appreciable by examination is effusion of lymph into the broad ligament. A rare specimen showing this change has been described by Dr. Lewers.§ The peritoneal folds were separated, so that the

* *See* cases by Handfield-Jones, *Clinical Journal*, vol. i. p. 138.

† *See* a paper by Noble, American *Gynæcological and Obstetrical Journal*, Jan., 1895.

‡ As in the case by Griffith, quoted subsequently.

§ *Obst. Trans.*, vol. xxx. p. 7.

ligament formed a convex swelling. When cut across, the cut surface looked like a coarse sponge; there were in it holes of various sizes separated by solid tissue, and containing blood-stained serum. (In this case there was also a small abscess in the ovary and a little lymph on the surface of the peritoneum.)

As the case goes on, the effusion into the cellular tissue undergoes one of three changes. (1) Absorption. (2) Organisation into fibrous tissue. (3) Suppuration. These terminations of the inflammation require separate consideration.

1. **Absorption.**—Fever, pain, and swelling last a few days, and then the symptoms subside and the swelling gradually shrinks, and at last cannot be felt. This is the common ending of the slighter cases of puerperal parametritis. The swelling goes away so completely that not a trace of it can be felt.

2. **Organisation into fibrous tissue.**—The morbid appearances in a case of this kind are thus described by West:* "The folds of the broad ligament, from the upper part of the vagina to the lower surface of the ligamentum ovarii, enclosed a mass of dense cellular tissue, of almost cartilaginous hardness, crying under the knife: dense white bands intersecting each other in all directions, and having a firm yellow fat between them. This mass was closely adherent along the whole side of the uterus, though the uterine tissue was in no respect implicated in it." The uterus and top of the vagina become fixed by beams of fibrous tissue as hard as wood, which last for years, although with lapse of time they get smaller, softer, and permit more movement. The cellular tissue which goes back on each side of the rectum, forms, when thus indurated, a half-ring, just within reach of the finger, surrounding the rectum in front, going back to the sacrum on each side of it, and feeling as if one with the bone. This fixed semicircle of induration narrows the rectum, but not to an extent enough to cause obstruction unless the bowels are very costive. This half-ring is characteristic of effusion into the *cellular tissue*, and is not produced by effusion into Douglas's pouch. Such organisation into fibrous tissue is hardly ever the ending of puerperal inguinal parametritis.

* "Diseases of Women," edited by Duncan, p. 430.

3. **Suppuration.**—A case of the most acute kind has been described by Dr. Griffith.* The broad ligament was distended with pus and sloughing cellular tissue, extending from the Fallopian tube above to the levator ani below; and from the side of the uterus to the side of the pelvis. There was suppuration in the ovary, and the abscess in the ovary communicated with that in the broad ligament. There was also peritonitis. In less acute cases than this the abscess cavity contains pus, but no slough, and is bounded by a dense, fibrous wall, outside which there is slight œdema.

Usual kinds of parametritis.—There is one form of parametritis after delivery commoner than all the rest put together. In parametritis independent of pregnancy, there is also one form commoner than any other. I shall describe these common forms first, then the rarer varieties.

THE COMMON FORM OF PUERPERAL PARAMETRITIS: ILIAC, OR INGUINAL PARAMETRITIS.†

Symptoms.—This disease comes on from a day to several weeks after delivery, in most cases within a week. It begins in about one-fourth of cases with a rigor, followed by febrile symptoms, and pain in the lower belly on the side affected. A common history is that the patient got up at the usual time, but that after being up a day or two she had to go to bed again. Vomiting and gastro-intestinal disturbance are rather less frequent than in peritonitis. Pain is almost always present. The difference in the symptoms of parametritis and perimetritis during the first two days is not marked or constant enough to be of use in diagnosis.

Physical signs.—At first there are no physical signs. In a day or two, on examination by the vagina, you feel fulness on one side of the uterus; and in the next few days this fulness gets larger and firmer (Fig. 88). As the swelling increases, it spreads outwards and forwards into the place where the lifting up of the peritoneum during pregnancy has made the cellular tissue looser than in the non-pregnant condition. (Fig. 87.) Hence comes swelling to be felt by abdominal examination.

* *Obst. Trans.*, vol. xxx., p. 5.

† *See* a Clinical Lecture by the author, *British Medical Journal*, May 26, 1900, p. 1273.

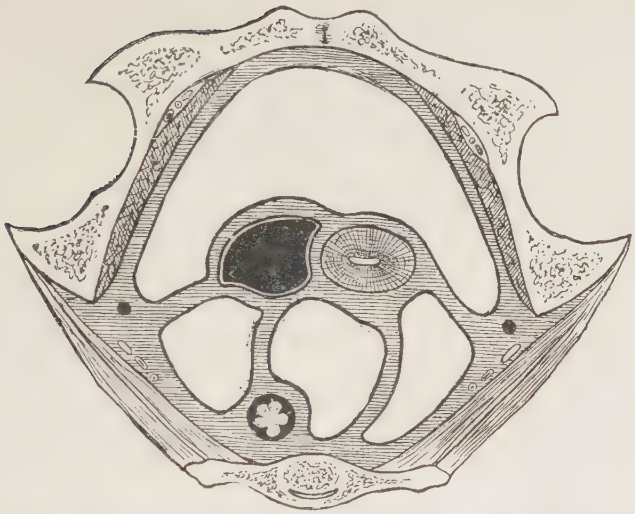


Fig. 88.—Diagram to illustrate the beginning of the common kind of puerperal parametritis: an inflammatory lump by the side of the uterus. (*After Fritsch.*)

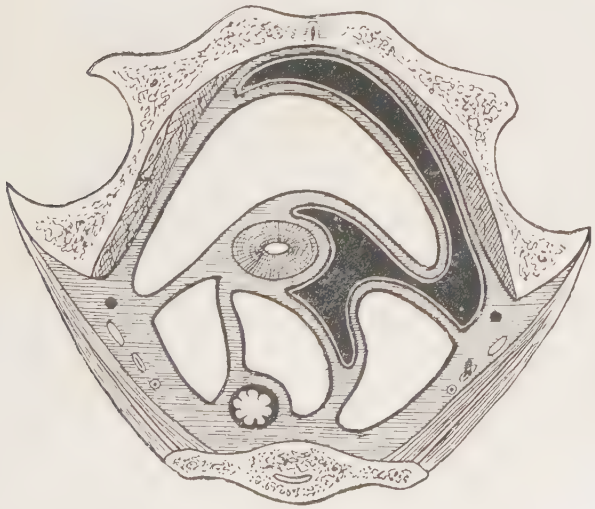


Fig. 89.—Diagram to illustrate the mode of extension of the common kind of puerperal parametritis: from the side of the uterus outwards to the pelvic wall, and then upwards and forwards behind Poupart's ligament. The beginning of extension between uterus and bladder, and back by the side of the rectum, is also shown. (*After Fritsch.*)

At the height of the disease you find a patient with fever, pelvic pain, and a tender swelling on one side, above Poupart's ligament (Fig. 89). This swelling, when at its height, has definite characters. It is fixed immediately under the belly wall. Its upper border is sharp. Its highest point is on a level with the iliac crest. Traced outwards, it sinks down a little before the anterior superior iliac spine is reached. Followed inwards,

Fig. 90.—Diagram to show the situation of the common kind of puerperal parametritis: above the pelvic brim, between the peritoneum and transversalis fascia. Lumps of inflammation in front of and behind the uterus are also shown. *N.B.*—The bulk of the swelling is not median, although here, for the sake of clearness, it is represented so. (*After Fritsch.*)

it slopes downwards an inch or two before the middle line is reached, till it seems to blend with the pelvic wall about a third of or half an inch beyond the middle line. The swelling hardly ever exceeds these limits or deviates from this shape. In a slight case it may not get so large as this; and if the case ends in absorption, it becomes smaller as the disease is subsiding. The swelling is produced by effusion of lymph into the cellular tissue between the transversalis fascia and the peritoneum (Fig. 90). The reason of its definite shape and size is, that its upper boundary is an anatomical one —viz. the line of firm attachment of the peritoneum to

the anterior abdominal wall. The inflamed cellular tissue covers the psoas and iliacus muscles where they pass over the pelvic brim towards their insertion into the femur. The inflammation sometimes involves these muscles, or burrows between them and the pelvic brim. When this is so, the thigh is fixed in a position of flexion. This occurs in about one case in ten. In such cases the illness is severe and its course long.

Inflammation sometimes continues in the broad ligament after it has spread into the groin; and then you feel on bimanual examination a lump by the side of the uterus, fixing it and feeling as if one with it, and one also with the lump in the groin. In other cases, by the time the inflammation has reached the inguinal region, absorption of the intra-pelvic exudation has begun, and then on examination by the vagina, you feel little or nothing abnormal, the inguinal swelling being the chief or the only physical sign.

Terminations of inguinal parametritis.—There are two ways in which this inflammation commonly ends: (1) *absorption*, also called "*resolution*;" and (2) *suppuration*. Matthews Duncan said that if suppuration was to begin at all, it began in a few days; and I think he was right.

(1) **Absorption.**—In cases ending in absorption, after a few days the pain gets better, the fever subsides, and the swelling becomes smaller. In most cases the swelling has within two or three weeks completely gone, not a trace of it being palpable. The whole illness is then over within a month from its beginning. Sometimes the inflammation is slower in disappearing, and the exudation becomes organised into fibrous tissue, which pulls the uterus to the side of the pelvis; but in these cases the abdominal swelling ceases to be felt. In time the fibrous tissue thus fixing the uterus becomes looser and softer. I think that in these cases of very chronic cellulitis the tubes and ovaries are usually involved.

(2) **Suppuration.**—Most statistics* based on hospital cases show that suppuration takes place in about half the cases. Matthews Duncan† thought this too low an estimate—he did

* *See* "West," ed. by Duncan, p. 428, and Griffith, "St. Barth. Hosp. Rep." vol. xvi.

† Op. cit., p. 128.

not say why. I think it too high, for I have seen parametritis in hospital out-patients end by absorption while the patients were keeping about. The later in the lying-in the disease comes on the more likely is suppuration to take place.

If suppuration takes place, pain and fever continue. The inguinal swelling becomes larger and, at first, harder. Then the skin over it becomes œdematous, red, and at length fluctuating. The usual place for pointing is a little above the internal abdominal ring; that is, near to where the round ligament leaves the abdomen. The next stage is that the abscess bursts or is opened. Until this has happened, pain, hectic fever, and wasting continue. When the pus has had exit, the temperature falls, pain ceases, nutrition improves, and rapid recovery takes place. In most cases the illness is over within three months of its commencement.

Diagnosis.—This depends upon the situation of the swelling. The seat of pelvic inflammation cannot be stated until the lymph is so organised that it forms a swelling which can be defined. The inguinal swelling of parametritis is identified by its characteristic position and shape.

It is not possible in the early days of the inflammation to say whether it will end in absorption or in suppuration. The longer the temperature keeps up and the swelling persists, the more likely is it that suppuration will occur.

Treatment.—There is no specific that will cut short pelvic cellulitis. All that can be done is to place the patient under favourable conditions, to relieve symptoms, and as soon as practicable to let out pus. (1) So long as there is fever keep the patient in bed. (2) Support the patient's strength. As in all febrile diseases, appetite is bad, there is thirst, and digestion is weak. In an uncomplicated case, the alimentary canal is healthy, except for the deficiency of the digestive juices brought about by the fever, which impairs digestion and makes the bowels costive. Therefore let appetite be tempted by as much variety of easily digested and nutritious food of all kinds as the skill of the cook can devise. Give stimulants, preferably light wine, if the patient is enabled to take more food thereby; and if pulse is feeble and extremities cold, give alcohol liberally. Give quinine if the patient's stomach will bear it. (3) Protect tender parts from pressure by adjustment

of bedclothes, cradles, pillows, etc. If pain is complained of, use sedative liniments of a kind that can be painted on the part, such as a 4 or 6 per cent. oleate of morphia, or Martindale's oleanodyne, but not such as need to be rubbed in. If a greater anodyne effect is required, give opium by the mouth. But in this disease the patient's suffering is more general malaise due to the fever than local pain. Iodine is credited with a power of producing absorption. It will do no harm, and may please the patient, if the abdomen is painted, either with tincture of iodine, or equal parts of the tincture and the liniment. I have not in this disease seen much benefit from counter-irritation. Some recommend painting the vagina: I think the necessary manipulations do more harm than good. (4) Let out pus. If suppurated parametritis is left to nature, it will generally burst. By opening it you save the patient a few days' pain, even if you do not shorten the illness; but I think you do shorten the illness. As soon as you can feel fluctuation, open the abscess by a free incision where it is pointing. Then lightly plug the abscess cavity with a strip of iodoform gauze, to ensure that the cavity may fill up from the bottom. When this has been done, rapid improvement in all symptoms generally at once begins. I know of few diseases in which the good effect of surgical intervention is so striking to the public.

NON-PUERPERAL PARAMETRITIS.

Most cases of parametritis are puerperal; the inflammation tends to spread above the true pelvis, and such cases are generally acute in their course ending either in resolution or in suppuration.

Non-puerperal parametritis is less common than the puerperal form. Its usual cause is injury to the cervix. In pre-Listerian days it was common after incision of the cervix. It may occur from laceration of the cervix with Hegar's dilators, or with the fingers; or from the use of tents without antiseptic precautions. I have known a patient complain that excessive sexual intercourse had produced the illness; but I know not whether to regard this as cause or coincidence. I have seen it in virgins, in whom I could not find out the cause.

Peculiarities of non-puerperal parametritis.—The disease in these patients differs from that in puerperal women in that it seldom tends to rise into the false pelvis; and in that it more often leads to organisation of lymph into fibrous tissue, and less often ends in suppuration.

Symptoms and signs.—The disease begins as in the puerperal form, with fever, sometimes a rigor, and pelvic pain. Diagnosis is not possible until the exudation has become firm enough to be felt. It is then made from the seat of the

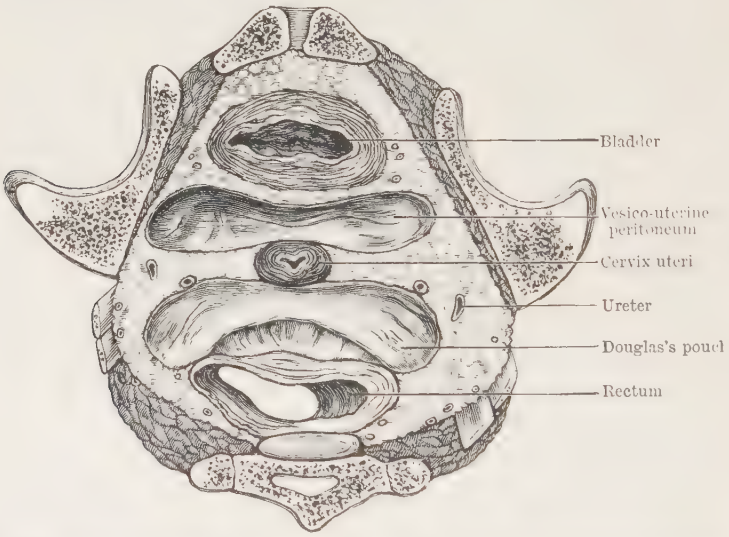


Fig. 91.—Horizontal section through pelvic cavity, showing cellular tissue surrounding rectum, and peritoneum in front of it. (*After Freund.*)

exudation. It is at first felt, as in the puerperal form, at the side of the uterus, low down, the induration beginning where the vagina is inserted into the cervix. When the inflammation extends, it spreads down and back, instead of up into the false pelvis as in the puerperal form. When there is much exudation the mass it forms feels as if it sloped off from the cervix uteri outwards and towards the pelvic outlet. (Fig. 84.) The upper third of the vagina becomes fixed by it. If the disease is bilateral, this fixation of the vagina is striking; the upper third of the vagina feels hard, stiff, and smooth;

and it usually participates in the inflammation, so that it is injected, and secretes pus. The exudation extends back on each side of the rectum, so that when you examine by the bowel you feel a concave half-ring surrounding the rectum and fixed to the bone on each side of it. Fibrous tissue in this situation is not, and cannot be, produced by perimetritis; for Douglas's pouch is in front of the rectum, between it and the vagina, and does not reach back to the sacrum on each side of the bowel. (Fig. 91.) This half-ring surrounding the front of the rectum is characteristic of exudation into the cellular tissue.

Course and terminations.—The usual course of non-puerperal parametritis is that the febrile symptoms run an irregular course, but usually subside within a few weeks.

1. The exudation may be completely absorbed, leaving behind no trace of its presence; in which case the patient gets well, and remains well.

2. The exudation may become organised into fibrous tissue. The uterus remains fixed for months, or it may be years: with time the fibrous tissue becomes looser; but the extent to which this change alters the physical signs depends upon the amount of fibrous tissue that has been formed. Solid knots of fibrous tissue may persist for years. When lapse of time has blurred the patient's recollection of her illness, such lumps may possibly be taken for new growths or for diseased tubes. Such organisation into fibrous lumps is, in my experience, commoner after non-puerperal parametritis than after puerperal, in proportion to the frequency of the two forms of disease; but it may occur after either. Freund says he has in *post-mortem* examinations several times seen one ureter, and once both ureters, compressed by a large lump of parametric exudation. The half-ring which surrounds the rectum narrows its calibre, but not to a degree which can produce obstruction so long as the bowel is daily emptied. It may do so if constipation leads to the fæces being large and hard. When fever has subsided, the patient ceases to have severe pain, and is able to get about; but if lumps of fibrous tissue remain in the pelvis, dull chronic pelvic pain may be felt for years. Freund, with reason, thinks that pressure on nerves and

veins may be the explanation of pelvic pain and local congestion.

3. Non-puerperal parametritis may end in suppuration; and in this case the usual place for pointing is by the side of the sacrum, over the sacro-sciatic notch. (Figs. 92 and 93.) But it may burst into the vagina, rectum, or bladder.

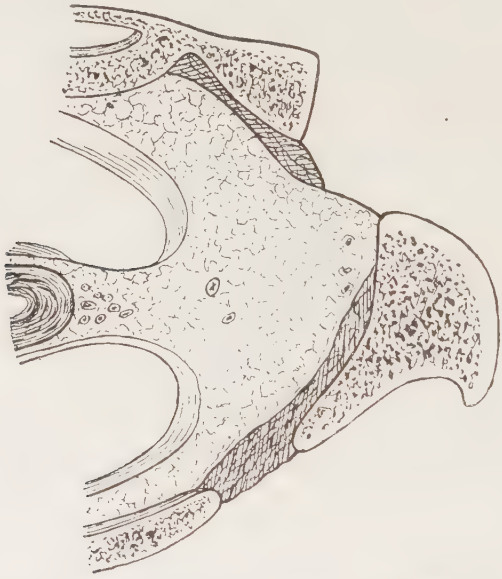


Fig. 92.—Showing cellular tissue extending back to sciatic notch. (*After Freund.*)

Freund, whose opinion, from the attention he has given to the subject, is entitled to great respect, thinks that this termination is commoner than is supposed; that small parametric abscesses often burst into the vagina, but the opening being minute, they are overlooked; and that when they burst into the rectum, the opening is above the semilunar folds, and therefore cannot be seen; and if the pus be mixed with the fæces, it may pass unnoticed.

4. Lastly, an abscess may form, but not burst; its contents may become inspissated, and remain quiescent for years, after which some accidental cause may rekindle inflammation, forming what Sir James Paget has termed a "residual abscess."

THE RARE KINDS OF PUERPERAL PARAMETRITIS.

I have described parametritis of the common kinds. I shall now less fully describe some of the rarer forms. They are so rare that my experience of them is not large enough to enable me to paint a very detailed picture of them. I will first mention cases exceptional in their acuteness.

Fig. 93.—Section through pelvis, near outlet, showing continuity of cellular tissue within pelvis, through sacro-sciatic notch, with that outside it. (*After Barbour.*)

Rapidly spreading inflammation of cellular tissue.—Sometimes the inflammation begins soon after delivery, spreads quickly to the peritoneum, and the patient dies within two or three days. This disease is what used to be called "phlegmonous erysipelas," or "erysipelas of the cellular tissue," and the spread of which along the limbs could often, in pre-Listerian times, be watched in hospitals. (We now know, thanks to Fehleisen, that this disease is not the same as cutaneous erysipelas, and therefore we no longer call it

erysipelas.) Virchow recognised the identity of acute puerperal inflammation of cellular tissue with this disease, and therefore called it "*erysipelas malignum internum.*" His account of its pathology is based on the dissection of the dead. The disease is seldom diagnosed as inflammation of the cellular tissue during life, because the patient dies before the exudation in the cellular tissue is sufficiently organised to be defined by the touch. It is one of those included under the term "puerperal fever," the inflammation of cellular tissue being merely a short stage in a process of general infection.

I have seen inflammation less acute than this, and yet more severe than the ordinary type: the disease beginning four or five days after delivery, and ending fatally within two or three weeks, with rapidly increasing inflammatory swelling, attended with diffused œdema of the skin over and around it, and great prostration. In some cases of exceptional severity, sloughing may take place, and such sloughing may open a large vessel, from which the patient may bleed to death. In a case of the kind mentioned by Galabin, the acute inflammation was due to the contagion of phlegmonous erysipelas. To this form Dr. Matthews Duncan gave the name of "*hæmorrhagic parametritis.*" *

Delay in pointing.—There are also cases exceptional in their long duration. A parametric abscess usually soon "points"—that is, the swelling each day bulges more and more, the skin becomes reddened and thinned at its most prominent part. But in some cases fever and wasting go on for many weeks without any appreciable change in the physical characters of the swelling. I know not how long such cases may go on if let alone; for in the cases of the kind that have been under my care, the persisting emaciation and fever have led me to interfere surgically, notwithstanding that fluctuation was doubtful and no sign of pointing present. I have had to cut through an inch of dense fibrous tissue before getting to the pus It seems as if the pus were kept down by some dense structure which the leucocytes find difficulty in absorbing; but I am unable to specify any peculiarity in the situation of the pus which can account for the slowness

* *See* "Obst. Trans.," vol. xxix.

in its coming to the surface. Nor know I anything in the circumstances of origin of these cases which can enable you to predict a protracted course.

When inguinal parametritis goes on for weeks without pointing, it ought to be opened. If the temperature keeps up (without physical signs elsewhere to account for it) and the lump does not get smaller, pus is present. Let out the pus by an incision like that made in ligaturing an iliac artery, *i.e.* above and parallel to Poupart's ligament. You will get at the pus without opening the peritoneum.

Pointing without bursting.—I have seen an abscess which pointed above Poupart's ligament, but did not burst; the place where the skin was red, thinned, and prominent ceased to be tense, and then sank in, so that a shallow depression was formed. This abscess, when opened, contained thin, serous fluid with yellow, cheesy flakes in it. It finally healed. I know not upon what this unusual course depended.

Delayed healing.—A parametric abscess of the common kind, when the pus is let out, closes up in a few weeks. But sometimes these abscesses are long in healing. The inflammatory exudation at the periphery of the inflamed part may have become organised into fibrous tissue, so that the abscess may have a tough, fibrous wall half an inch, or even an inch, in thickness. An abscess with such walls may discharge for months.* When muscle enters largely into the formation of the abscess wall, the alternate contractions and relaxations of the muscle may interfere with the closure of the abscess. I have had under care a case in which an abscess cavity did not close until my colleague, Mr. Openshaw (at that time resident accoucheur in the London Hospital), fixed the pelvis and thigh by a plaster of Paris bandage. In such cases, if the opening for the escape of the pus be not kept patent, it will close, the pus will accumulate, then the abscess will burst, and will close again, and so on. This is "what has been called progressive suppuration—renewed and renewed suppuration, with little or no fever."† Matthews Duncan mentions a case in which this went on for two years.

* *See* Handfield-Jones, *Clinical Journal*, vol. i., p. 139.

† Duncan, "Clinical Lectures." 4th edition, p. 258.

Unusual situations of pointing.—It is difficult to state exactly the relative frequency with which different situations are the seats of pointing of parametric abscesses. The older writers were not aware how difficult it is to be sure of the seat of suppuration, and many cases described in old books as cellulitis, without any suspicion that there might be error, would now be thought either intra-peritoneal abscesses or suppurated cysts. There are cases of pelvic suppuration in which, at the present time, it is not possible to be sure whether the suppuration is intra-peritoneal or extra-peritoneal, or a suppurated cyst. The diagnosis is sometimes so difficult that the existence of cellulitis has been denied; and surgeons influenced by this teaching have opened the abdomen, and found that all the disease was outside the peritoneum, in the cellular tissue.* In most cases the diagnosis is certain enough to make such an operation unnecessary; but the frequent possibility of error makes me refrain from attempting to estimate the relative frequency of the rarer modes of extension of the suppuration.

Puerperal suppuration starting in the broad ligament usually makes its way above the pelvic brim and to the front. It may extend up by the *back* of the pelvis to the kidney, producing a *perinephritic abscess*. It hardly ever extends up the side of the pelvic brim, so as to form an abscess over the iliac fossa, but I have known it do so. An abscess in this situation is rare, and almost always takes its origin from bowel or bone, not from the broad ligament.

The common seat of pointing for an abscess lying over the front of the false pelvis is above the middle of Poupart's ligament. But such an abscess, even though unilateral at the beginning, may point in the middle line of the abdomen.† Sometimes the pus escapes from the pelvis by way of the femoral ring, underneath Poupart's ligament, and points on the inside of the thigh. I have known it burrow underneath Poupart's ligament, and point in the thigh outside the femoral vessels. I have seen it point in two places at once—above Poupart's ligament and below it. I have known the pus collection situated in the middle line,

* *See* Noble, *American Gynæcological and Obstetrical Journal*, January, 1895.

† *See* McClintock, "Diseases of Women," p. 11.

in front of the uterus, feeling as if one with it, and burst at the umbilicus.* The physical signs in such cases give the impression that the abscess is in the uterine wall. But abscess in the uterine wall, verified by dissection, is excessively rare, and abscess in the cellular tissue common. These patients got well, and therefore the seat of the abscess cavity was not defined by dissection. My conjecture is that the abscess began in the commoner site, and reached the umbilicus by way of the vesico-uterine cellular tissue and the urachus.

The foregoing are terminations of abscesses above the true pelvis. Sometimes a puerperal abscess in the broad ligament, instead of spreading up above the pelvic brim, leaves the pelvis by the sacro-sciatic notch, and points in the buttock by the side of the sacrum. I have known it follow the tendon of the obturator internus muscle to the trochanter and point in the thigh near this bony point.† It may burst into the rectum, but most abscesses so bursting are, I think, perimetric, not parametric. It may, but very seldom does, extend down by the side of the rectum to the ischio-rectal fossa, and burst by the side of the anus.‡ It may burst into the vagina. The only cases in which I have seen this occur were non-puerperal. Parametric abscess may burst into the bladder. Matthews Duncan relates a good example of this.§ I have known pus suddenly discharged from the uterus in such quantity as to lead to the belief that an abscess had burst into the uterine cavity, but whether parametric or not I could not say. An intra-pelvic abscess may perforate the obturator foramen. I have only seen one instance of this. Matthews Duncan says it may burst into the hip joint, an event obviously entailing serious consequences. But he does not say whether, in the case he refers to, it was proved by dissection that the suppuration was due to no other cause than the extension of a parametric abscess. All these places of bursting are exceptional: the puerperal parametric abscesses which

* *See Obstetrical Journal*, vol. v. p. 352.

† Duncan, "Perimetritis and Parametritis," p. 159, quotes from Thomas a similar case.

‡ *See* McClintock, op. cit., p. 13.

§ "Clinical Lectures," 4th edition, p. 245.

burst above Poupart's ligament outnumber all the rest put together.

Bending and fixity of the thigh.—In most cases the thigh is a little flexed, and extension of it is painful. This is because the superficial parts of the psoas and iliacus muscles are involved in the inflammation of the cellular tissue which lies over them. But in some cases the thigh is bent up at a right angle, or near it, and fixed. This happens in about one case in ten. In cases of this kind I have found that a pocket of the pus-containing cavity extended underneath the psoas muscle, between it and the bone. When the matter is let out the thigh ceases to be fixed, and it regains its proper position and mobility as the cavity closes.

Association with albuminuria.—Matthews Duncan* showed that in parametritis albuminuria often occurs. This is sometimes due to bursting of an abscess into the bladder or to coincidence with cystitis or one of Bright's diseases. But apart from these cases, there are others in which there is during parametritis much albumin in the urine—half its bulk or more, without either casts or pus. As the parametritis gets well, so does the albuminuria. This albuminuria is rather more frequent in cases that suppurate than in those that do not. Dr. Duncan associated it with the embryonic proximity of the kidney and generative organs, the frequent aching of the kidney during menstruation, and the occasional extension of parametric suppuration up to the kidney.

Remote parametritis.—It is common to find suppuration in the inguinal region, while in the broad ligament near the uterus the inflammation has ended in resolution. There may be suppuration farther from the uterus than this, the inflammation being continuous with that near the uterus which has not suppurated. This Matthews Duncan termed "remote parametritis with continuity." But there are other cases in which there is an abscess which apparently has no connection with the uterus, there being nothing abnormal felt by the vagina. Nevertheless, from the development of a large abscess without any discoverable cause, except the possible accident of labour, it is inferred that the suppurative

* "Medico-Chir. Trans.," vol. lxvii. 1884.

inflammation began near the uterus, and that the changes caused at the place of its origin have subsided. This is "*remote parametritis.*" Matthews Duncan relates a case of abscess in the thigh of this kind. I have seen a large puerperal abscess in the buttock without pyæmia, disease of bone, injury, or trace of intra-pelvic disease.

Puerperal parametritis not rising into the false pelvis.

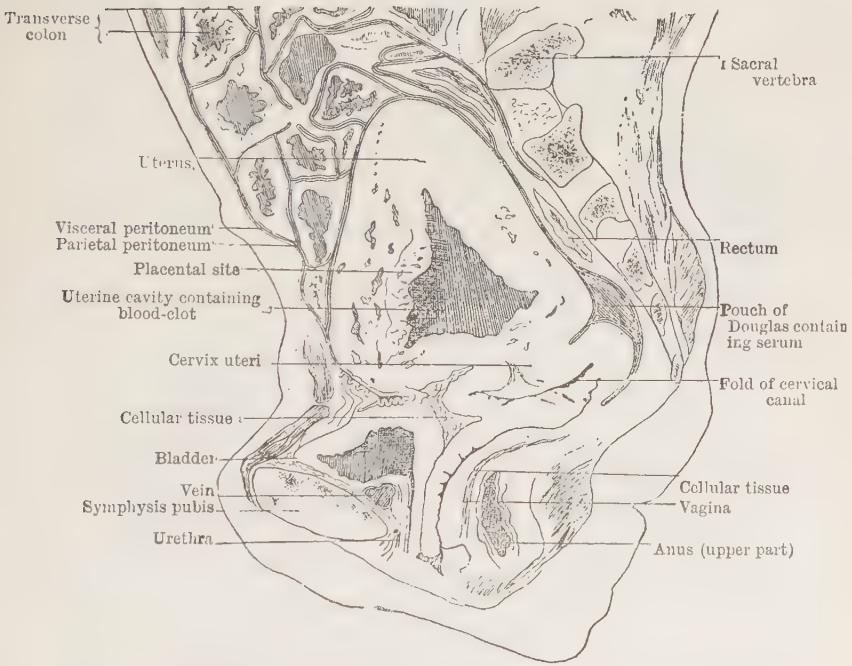


Fig. 94.—Section through pelvis of puerperal woman in sagittal plane, showing cellular tissue between uterus and bladder. (*After Barbour.*)

—In some cases of puerperal parametritis the inflammation does not rise above the pelvic brim, but extends in the same manner as in the non-puerperal form, downwards to the pelvic outlet and backwards around the rectum. These cases resemble non-puerperal parametritis in their course and effects. The unusual course of the inflammation doubtless depends upon some peculiarity in the time or manner of its causation, but I know not what.

Anterior parametritis.—Sometimes parametritis begins

in the vesico-uterine cellular tissue. (Fig. 94.) This is not common. It may suppurate and burst into the vagina or into the bladder, or extend into the inguinal region. (Fig. 95.) The cases I have seen have been mostly non-puerperal; but I

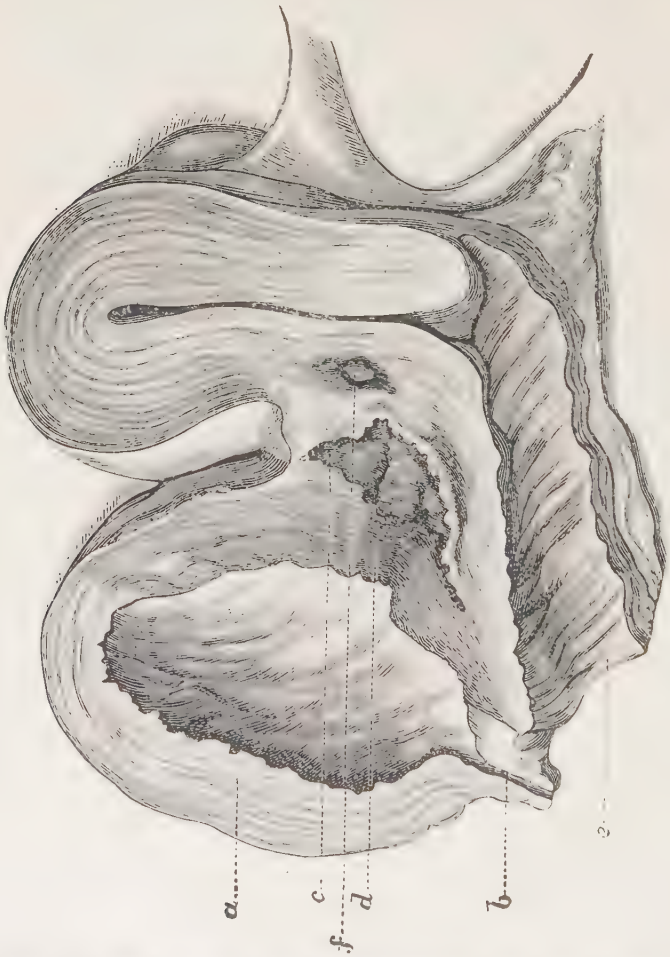


Fig. 95.—Suppurated anterior parametritis. (*After W. S. A. Griffith.*)
a, Bladder contracted; *b*, Urethra; *c*, Parametritis; *d*, Communication between abscess and bladder; *e*, Vagina; *f*, Extensions of abscess into cervix.

have not seen enough to make me sure that this is the rule. One of my patients was a virgin; another was sterile, and attributed the inflammation to excessive sexual intercourse, but whether this was cause or coincidence I know not.

Pubo-vesical cellulitis.—I have twice seen inflammation of

the cellular tissue between the bladder and pubic symphysis. One case ended in recovery by absorption of the exudation while the patient was attending as an out-patient. The other suppurated: the patient was admitted into hospital, and the abscess opened. I explored the cavity with the finger, but could find no sign of bone disease, nor anything to account for the inflammation. The cavity quickly closed. The illness in each case was over in less than a month.

Non-puerperal inguinal parametritis.—Sometimes, but very seldom, in parametritis independent of pregnancy, the inflammation extends upwards into the groin. I have seen this in virgins. In these cases, although the swelling in the groin was like that of puerperal parametritis, yet the course of the illness was like that of non-puerperal parametritis, in being chronic, slowly suppurating, so that when opened nearly an inch of dense fibrous tissue had to be cut through before the pus was reached.

Parametritis during pregnancy. — Matthews Duncan says he has seen a case in which parametritis began and ended during pregnancy.* This is very rare; I have never seen it.

Inguinal cellulitis from malignant disease resembling parametritis.—Cancer of the cæcum or the sigmoid flexure may lead to inflammation of the cellular tissue in the groin, and this may form a swelling precisely resembling, at one period of its course, that of inguinal parametritis. The condition which forms the bulk of the swelling is, in fact, the same in both cases; the difference between the two is in the cause of the inflammation and its course. Puerperal parametritis follows delivery, and gets well. The inflammation dependent on cancer comes on without any preceding affection of the genital organs, either physiological or pathological; and as the cancer grows, the lump in the groin goes on getting bigger. Matthews Duncan mentions a case in which cellulitis was associated with cancer of the cæcum.† I have seen one dependent on cancer of the sigmoid flexure. In my case there was an abscess which was opened. But when the pus was let out, the cavity did not close, the swelling around

* "Clinical Lectures," 4th edition, p. 240.

† Ibid., p. 261.

went on increasing, and presently fæces began to come through the wound. These features would make the diagnosis of such cases easy were it not that inguinal cellulitis from this cause is so rare.

Chronic parametritis with sloughing.—Parametritis with sloughing is usually an acute disease which ends fatally before the discharge of sloughs can begin. But Matthews Duncan* has described one case of chronic parametritis ending in discharge of sloughs, the illness extending over at least four years, and ending in recovery. This case is unique.

Chronic atrophic parametritis. — We have to thank Professor W. A. Freund, of Breslau, for a full description of the morbid changes to which he has applied the term.† Matthews Duncan‡ has used it to denote also morbid changes expressly excluded by Freund from his description of the disease.

Three forms of disease have been denoted by this term. (1) When acute inflammation of the cellular tissue within the pelvis has ended in the organisation of the effused lymph into fibrous tissue, although in time this tissue usually gets looser and more yielding, yet it may remain months or years without great alteration. This is what Duncan called atrophic parametritis. Duncan's words are: "When relaxation and softening of the parametric induration does not take place, or takes place imperfectly, you have a case of what is called '*parametritis atrophicans.*'" This is a not uncommon sequel and effect of parametritis, especially of the non-puerperal form.

But it is not what Freund means by the term. The process described by Freund is chronic from the beginning, and has, he says, no acute stage. He distinguishes two forms—the *circumscribed* and the *diffuse*. (2) The circumscribed form is secondary to disease of the bladder, the rectum, or the uterus. Long-standing cystitis leads to thickening of the cellular tissue about the base of the bladder. In chronic dysentery, or ulceration of the rectum, there is thickening of the cellular tissue around the rectum.

* "Perimetritis and Parametritis," p. 239.

† "Gynäkologische Klinik." Strasburg, 1885.

‡ "Clinical Lectures," p. 254.

(Freund thinks that from laceration of the cervix uteri there results induration of the cellular tissue around the uterus. But as laceration of the cervix occurs in nearly all mothers of large families, if this were so, atrophic parametritis ought to be much commoner than it is.) The disease consists of induration and overgrowth of the loose connective tissue about these different parts, so as to stiffen them, processes of indurated tissue stretching out from the part which was the origin of the disease. This fibrous tissue is believed to contract, and pull the movable organs in the pelvis towards it. The peritoneum on the affected tissue is thickened, opaque, and less movable on the parts below than it should be. (I have said "is *believed* to contract," because it is difficult to say how much displacement of parts is due to contraction of cellular tissue, and how much to thickening or adhesions of peritoneum.) If the cellular tissue around the rectum be affected, hæmorrhoids are produced by the pressure on the veins. Some* have thought that the displacements of the uterus produced either by adhesions of the peritoneum or contraction of cellular tissue are very important. I have spoken in Chapter XI. of the possible results of fixation of the uterus. Such change in the place of the uterus as is produced by contraction of cellular tissue is unimportant, produces no effect on the uterine functions, and does not modify the clinical history of the case.

(3) In the *diffuse* form, all the cellular tissue in the pelvis is stiffened by overgrowth of fibrous tissue. In Freund's opinion, this may either come from extension of the circumscribed form, or may begin in the cellular tissue near the uterus, and extend all round it. In either case, when the disease is advanced, the fibrous tissue compresses the vessels, and so leads to narrowing, dilatation, and thromboses of veins. It may fix and kink the ureter, and pull it nearer to the cervix. It may lead to catarrh of bladder and rectum; to changes in the uterus like those of chronic metritis; to thickening and contortion of the Fallopian tubes. It makes the vagina short and smooth. The induration may extend up to the meso-colon and meso-cæcum, and fix these

* *e.g.* Schultze and Macan.

parts abnormally close to the pelvic wall. There is peri-neuritis of Frankenhauser's ganglion, with atrophy of nerve fibres and cells.

I doubt not the correctness of Freund's description of these changes in the cellular tissue, and therefore I have quoted it. But I accept not with equal confidence his opinion that the diffuse form of atrophic parametritis is the primary disease which by its gradual extension produces the morbid changes in other parts—tubes, uterus, rectum, etc.—which Freund has found by dissection often to exist along with it. I think that Duncan was right in regarding the condition described by Freund as a late result of acute parametritis; and that the changes in the other pelvic organs are also results of old pelvic inflammation, and not results of gradual development of fibrous tissue outside them.

Clinical history of atrophic parametritis.—Its chief causes in young subjects, according to Freund, are dysentery during childhood, and immoderate coition when the sexual organs are undeveloped. Both these causes are happily rare in England. The diffuse form he has never seen before puberty, seldom before thirty; generally between thirty-five and the menopause—an age distribution in harmony with the view that it is a result of long past acute parametritis. Freund thinks its two great causes are sexual excitement, excessive or unnatural, and debilitating influences. I quote these statements because the former has been copied into other books; but no evidence has been produced in its support.

No clinical features can be described as characteristic of atrophic parametritis, for its symptoms and course depend upon the condition of the organs which the cellular tissue surrounds. The patients suffer from persistent pelvic pain, but the seat and behaviour of this pain depend on the conditions associated with the parametric induration. They often suffer from neurasthenia and its "Protean symptoms," including hysteria, because chronic pain and the monotonous life which incapacity for exertion enforces, depress nervous energy.

Treatment.—The condition of the cellular tissue in atrophic parametritis is irremediable. Time only will

improve it. The treatment consists in remedying if possible such morbid conditions of the uterus, ovaries, Fallopian tubes, bladder, or bowel, as are present, and in restoring the patient's nervous tone by sleep, food, rest, and change. On the theory that the pulling of the uterus this way or that by adhesions causes symptoms, it has been proposed to break down adhesions forcibly, or to gradually stretch them by pelvic massage. The former proceeding, if carried out (for in some reported cases I think the breaking of adhesions was imaginary), is dangerous to the patient, for it may lead to fatal hæmorrhage or peritonitis.* Prolonged manipulation of the genital organs of women (which massage involves) cannot be good for the doctor's reputation or the nervous system of the patient. Both proceedings are useless, for the position of an adherent uterus has in ninety-nine cases out of one hundred no effect upon its functions.

* See "Obst. Trans.," vol. xx. p. 102.

Part IV.

INTERNAL HÆMORRHAGE.

CHAPTER XIX.

GREAT INTERNAL HÆMORRHAGE.

Internal hæmorrhage may be great or slight; it may be into the peritoneum or into the cellular tissue. Hæmorrhage into the peritoneum may be so great as to kill the patient; hæmorrhage into the cellular tissue is never so great as this. Dead blood containing micro-organisms may escape into the peritoneum, and set up peritonitis; but this is not bleeding; it is a late result of former bleeding. In this chapter I ask attention to the first group, viz. *cases of great hæmorrhage in which the patient is in danger of dying quickly from loss of blood.*

In the diagnosis of these cases, the first thing is to know that there is internal bleeding; then to be sure that this bleeding is into the abdomen; then, if you can, to find out its cause.

The symptoms of great internal bleeding.—The patient is very pale. Her lips are nearly white. Her pulse is small and quick. Her extremities are cold. She is powerless; if she tries to stand, she faints. Sometimes she is restless, throwing her limbs about. This is a bad symptom, indicating approaching death. There is breathlessness, but no difficulty of breathing; no loss of consciousness; on the contrary, the intellect is clear. She may complain of pain, but the pain, if present, is not severe.

The diagnosis of intra-abdominal bleeding. — The extreme pallor and the smallness of the pulse, together with the sudden onset of these symptoms, show that blood has been lost. It is not difficult to find out whether there has

been external hæmorrhage or not. If no blood has been lost outside, the bleeding must have been inside. The absence of difficulty of breathing shows that the prostration is not due to a condition within the chest. The clearness of the intelligence and the absence of paralysis show that there is no brain disease. If, then, there has been no bleeding outside, and there is no sign of disease in the head or chest, the source of the trouble must be in the belly. The belly is soft and not markedly tender; there may be dulness in the flanks; pain is slight; there is little or no vomiting; and there is no fever; and thus you know the disease is not peritonitis. If the blood has had time to clot, you may feel a swelling in Douglas's pouch. But till the blood has clotted, there are no definite physical signs.

The causes of bleeding in the abdomen.—We may divide these into two classes: (*a*) those which occur in both sexes; (*b*) those peculiar to the female; and make a broad general statement about these two classes. (*a*) The first class are, as a rule, preceded by symptoms from which the cause may be inferred. There may be apparent exceptions to this rule, as in cases in which information about the previous history cannot be got, or is inaccurately given; but these exceptions are rare. (*b*) Some of the causes peculiar to females produce symptoms before they cause bleeding: but some cause none, so that great internal hæmorrhage may be the first revelation that there is anything wrong.

THE CAUSES OF GREAT INTRA-ABDOMINAL BLEEDING WHICH ARE COMMON TO BOTH SEXES.

Ulcer of the stomach or duodenum may cause collapse, either by *perforation*, so that the contents of the viscus escape into the peritoneum, or by *hæmorrhage*, either into the cavity of the viscus, or after perforation, into the peritoneum. Such ulceration is accompanied with pain after food, vomiting, and hæmatemesis. These symptoms may be slight and recent; they are sometimes, though rarely, absent.

Ulceration in enteric fever may cause sudden collapse, either by *perforation* or by *hæmorrhage* either into the bowel

or the peritoneum. In this case, the sudden illness will have been preceded by febrile symptoms. Perforation of bowel does not occur early in the course of enteric fever; so that even in the "ambulant" form of typhoid, although the patient may not have been aware of the gravity of the illness, yet there will be a history of some symptoms.

Cirrhosis of the liver may cause great bleeding into stomach or bowel. But this is not common in young women, and it has symptoms.

It is possible that **tubercular or dysenteric ulceration** of the bowel may lead to hæmorrhage so great as to cause sudden collapse. But these diseases never cause such hæmorrhage in their early stages; there will be in such cases always a history of prolonged illness.

Rupture of an aneurysm may cause sudden bleeding into the abdomen. This may perhaps occur in a patient who has previously thought herself well; but abdominal aneurysm is, in women, exceedingly rare.*

THE CAUSES OF INTRA-ABDOMINAL HÆMORRHAGE PECULIAR TO THE FEMALE.

Great hæmorrhage into the peritoneal cavity may take place in a woman who, until the bleeding began, thought herself perfectly well. The bleeding may be from one of four causes:—

1. Rupture of a pregnant Fallopian tube.
2. Rupture of a varicose vein.
3. Rupture of an ovary.
4. Rupture of the gravid uterus.

The first of these causes is commoner than all the rest put together. The second is so rapidly fatal that it has never been successfully treated. The third and fourth are so rare that their existence has been denied.

The causes of intra-abdominal hæmorrhage which are common to the two sexes so rarely cause such hæmorrhage without previous symptoms, that it may be laid down as a rule, that great intra-peritoneal hæmorrhage occurring in a previously healthy woman whose age is that within which

* *See* Fagge, "Medicine," 1st edition, vol. ii. p. 75.

pregnancy is possible, is much more likely to be due to a ruptured tubal pregnancy than to anything else.

Events which may follow rupture of tubal pregnancy.—Great hæmorrhage from tubal pregnancy generally occurs

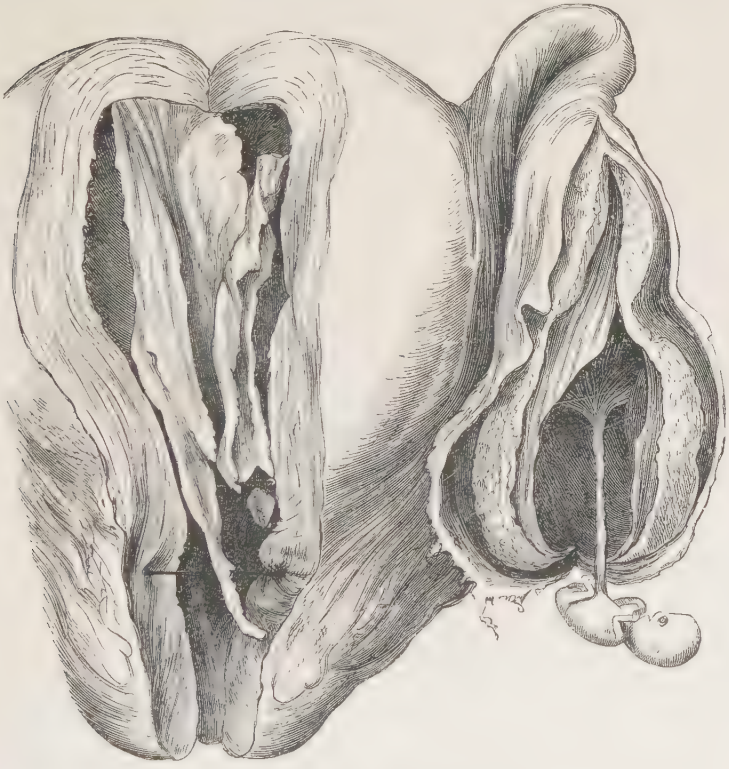


Fig. 96.—Tubal gestation and rupture. (*From a Specimen in the museum of St. Thomas's Hospital.*) (*After R. Barnes.*)

before the end of the second month. (Fig. 96.) The rupture may be between the layers of the meso-salpinx, and then the hæmorrhage will be into the cellular tissue, and outside the peritoneum. This does not concern us here. The rupture may take place where the tube is covered by peritoneum. Then the bleeding will be into the peritoneal cavity. The amount of blood poured out bears no relation to the size of the rent in the tube. Dr. Russell Andrews*

* "Obst. Trans.," 1903.

and others have shown that in tubal pregnancy the ovum develops in the wall of the tube, not in its lumen: the trophoblasts eat their way into the wall of the tube as they do into the uterine mucosa in normal pregnancy. The ovum comes to lie in a cavity bounded at one part by muscular tissue and peritoneum (called by some *basalis*), at another by muscular tissue and mucous membrane (called by some *capsularis*). These terms are applied by analogy with uterine pregnancy: "*decidua basalis*" being the new term for decidua serotina, and "*decidua capsularis*" for decidua reflexa. There is no true decidua in the tube, although cells like those of decidua are produced in it after pregnancy has begun. During the first seven or eight weeks the trophoblasts go on eating up tissue, and in the process they open up vessels so that hæmorrhage takes place. This hæmorrhage causes tension within the cavity, and then rupture. This rupture may be on the peritoneal aspect of the sac (basalis), or it may be of the capsularis. If the latter, the ovum will escape into the lumen of the tube, and blood along with it. This is called *tubal abortion*. In this case the blood distends the tube, the bleeding takes place under tension, and therefore soon stops. There may be, and generally are, repeated hæmorrhages. The blood may escape from the abdominal ostium of the tube in variable quantity. If in small quantity it will clot, and the clot will become organised into fibrous tissue. While this is going on fresh bleedings may take place from the tube, stretching the organised clot that surrounds its ostium: and thus a swelling is formed consisting of recent blood within limited by a capsule of older clot organised into fibrous tissue. This capsule may lie free in the peritoneal cavity, or be adherent to bowel, ovary, uterus, or parietal peritoneum. A swelling of this kind, lying around the ostium of a Fallopian tube, has been called a *peri-tubal* hæmatocele. Exactly the same thing may happen, though it is much more rare, round a rupture of the peritoneal surface of the tube: and this has been called a "*para-tubal*" hæmatocele.* Tubal abortion, followed by the formation of a hæmatocele, death of the ovum, and absorption of hæmatocele and ovum, is much the commonest termination of tubal pregnancy. Rupture

* Handley, "Obst. Trans.," vol. xliv., 1902.

with great bleeding into the peritoneal cavity is fortunately much rarer. There is yet another event that may happen. Tubal abortion may take place, but the abdominal ostium of the tube get stopped up, either by clot or by adhesions. Then further bleeding into the tube may first distend and then cause *secondary rupture* of the tube.

Although a tubal pregnancy sometimes bursts without any preceding symptoms to indicate its presence, yet there are sometimes symptoms before the great bleeding.

The symptoms of early extra-uterine pregnancy.—In the beginning there are no symptoms beyond those of natural pregnancy, viz. amenorrhœa, morning sickness, and slight fulness of the breasts. This is why tubal pregnancy has been so rarely discovered before rupture. It can only be found out if some accidental reason leads to a vaginal examination. Then the uterus is found slightly enlarged, and on one side of it there is a movable swelling larger than the normal uterine appendages. If, with such physical signs, a patient thinks she is pregnant, it is probable that the swelling is a tubal pregnancy. But attention is usually not called to the case until slight hæmorrhage has taken place.

Symptoms of tubal pregnancy in which slight hæmorrhage has occurred.—In most cases of tubal pregnancy in which the diagnosis is made, it has been made from the symptoms caused by a slight hæmorrhage. In nearly every case in which the belly has been opened because extra-uterine pregnancy was suspected, the tumour felt has been found to consist mainly of clotted blood; and with great hæmorrhage clots of different dates have been found.

The symptoms that usually lead to the diagnosis of early extra-uterine pregnancy are the following:—

1. **The patient's sensations.**—The patient thinks she is pregnant. She has missed a menstruation, perhaps two; she feels sick in the morning; she has fulness of the breasts; in short, the same subjective sensations as in former pregnancies. If you suspect extra-uterine pregnancy, the fact that the patient also thinks herself pregnant should strengthen your suspicion. But if the patient does not think that she is pregnant, that has no weight in the negative scale, for

patients with uterine pregnancy are often uncertain about its existence.

2. **Severe paroxysmal pains in the lower belly.**—These attacks of pain sometimes come on without any known cause; sometimes are provoked by some local cause, such as coitus or defæcation. The pain is often severe; vomiting, pallor, perspiration, smallness of the pulse, tenderness of the lower belly, have been perceived with the attacks. The attacks of pain last from a few hours to a day or more. When the pain passes off the patient is well. They seldom begin before the end of the first month, and have been observed to recur from time to time as late as the fifth month. Later than this such pains seldom occur.

There has been much theorising as to the cause of these pains. They have been said to be due to contractions of the tube—a pure theory, without evidence; to peritonitis—a view negatived by the large proportion of cases in which such attacks of pain occur, and the small proportion in which either *post-mortem* or at operation evidence of peritonitis has been found; to distension of the tube by the growing ovum—against which must be considered that growth is gradual, while the pain is paroxysmal, and that specimens show the amnion is neither tense nor filling the tube. These are theories constructed before operative experience had taught us the conditions really present. These pains are due to hæmorrhage. The repeated attacks of pain are caused by repeated hæmorrhages. In every case in which there has been such paroxysmal pain, and operation has been done, it has been found that hæmorrhage had occurred. In the few cured by operation before hæmorrhage there has been no pain.

3. **Irregular hæmorrhages from the vagina.**—These are so frequent that Petit, who wrote in 1770, said that in gestation outside the uterine cavity menstruation continued. These hæmorrhages are seldom great in amount. The chief importance of this symptom is that it may be taken for menstruation, and thus the patient and her doctor may overlook the missed menstruation. I shall speak of the cause of this hæmorrhage in the next paragraph.

4. **The discharge of decidua.**—In extra-uterine preg-

nancy, a decidua vera (but no decidua reflexa) is formed in the uterus; and is at some time or other discharged. It may be broken up, and pass away in a pulp, along with blood. It may be expelled as a sac, forming a cast of the uterine cavity; in two pieces, one of which lined the anterior, the other the posterior uterine wall; or in several smaller bits. When it comes away in a mass, its expulsion is accompanied with pains and hæmorrhage like those of abortion: and if the patient notices the membrane, she may think she has miscarried. As in abortion hæmorrhage from separation of the chorion often takes place long before the expulsion of the uterine contents; so, in extra-uterine pregnancy, the separation of the decidua often causes bleeding before this membrane comes away. This is the explanation of the irregular hæmorrhages referred to in the preceding paragraph. The date at which the decidua is expelled varies, but it is more often early than late.

The discharge from the uterus of a decidua strengthens the diagnosis of extra-uterine gestation. If the decidua be that of *pregnancy*, there is certainly a fœtus; and if the decidua is discharged, the fœtus cannot be *in utero*. It is therefore important to have a clear idea of its characters. The decidua of extra-uterine pregnancy is like that of membranous dysmenorrhœa, except that it is larger and thicker. Its internal surface is smooth, and dotted with the mouths of the uterine glands. Its outer surface is rough, shaggy, and villous, the villi being the ends of the uterine glands.

The decidua of extra-uterine pregnancy differs from that of uterine pregnancy in showing no trace of a decidua reflexa, or of an amnion.

It was at one time thought that the discharge of such a membrane made the diagnosis of ectopic pregnancy certain; but cases published by Griffith,* Dakin,† and Eden‡, show that this not the case.

5. **Presence of a pelvic swelling and of uterine contraction.**—It may be that a doctor had examined the patient before the great bleeding took place. If it then was found that the patient—who thought she was pregnant, had had paroxysmal pains and irregular hæmorrhages, and had passed

* "Obst. Trans.," vol. xxxvi. † *Ibid.*, vol. xxxviii. ‡ *Ibid.*, vol. xxxix.

a decidua—had a slightly enlarged uterus, and on one side of that uterus a swelling, the examiner should have concluded that ectopic pregnancy was present. If, knowing that these signs and symptoms were present, you find that the patient has great intra-abdominal hæmorrhage, you may safely assert that rupture of an ectopic pregnancy is the condition present. If the patient has not been examined before the occurrence of hæmorrhage, but the hæmorrhage has been preceded by the symptoms described, it is almost equally probable.

A ruptured tubal gestation cannot be treated till the abdomen has been opened. I shall describe the treatment after I have discussed the rarer sources of intra-peritoneal bleeding in women.

1. **Intra-peritoneal bleeding from rupture of a varicose vein.**—Bursting of veins in the pelvis happens usually with patients either pregnant or recently delivered. This bleeding is generally into the cellular tissue, and attracts attention rather by the tumour the effused blood forms than by the general signs of loss of blood.

Rupture of a varicose vein, so that intra-peritoneal hæmorrhage follows, is much more rare, but occasionally occurs. This may take place in women who are not pregnant, and who think themselves in perfect health. The bleeding is great, and rapidly fatal. In the work of Bernutz and Goupil two cases are quoted: but one of these (the second), I think may have been extra-uterine pregnancy. Madame La Chapelle* says she has once seen ovarian varices burst during labour, and cause rapidly fatal internal hæmorrhage. R. Barnes† quotes a case at third hand. Scanzoni‡ says he has once seen it.

We know nothing of the causes which determine rupture of varicose veins of the broad ligament. In the indubitable case related by Bernutz there was in the vein a circular ulceration about a line in diameter. We know not the causes of such ulceration.

The only treatment that could possibly be of use is to open the belly, pull up the broad ligaments, and find the

* "Pratique des Accouchements," vol. iii. p. 86.

† "Diseases of Women," 1st edition, p. 605.

‡ "Diseases of Females," translated by Gardner, p. 406.

bleeding point; transfix the ligament below and tie it on each side of the bleeding point. This has never yet been done. The recorded cases have been too quickly fatal (one quoted by Bernutz died in half an hour) for treatment.

2. **Intra-peritoneal bleeding from rupture of an ovary.**—Intra-peritoneal hæmorrhage, so great as to endanger life sometimes, but seldom, comes from the ovary. The pathology of the conditions which cause bleeding from the ovary is obscure. For the sake of clearness I will mention briefly all the conditions of the ovary that cause bleeding; so that those which cause great bleeding may be seen in their relation to those which cause only slight bleeding.

(*a*) *Follicular hæmorrhage.*—Whenever a Graafian follicle bursts there is a little bleeding. This bleeding into Graafian follicles is sometimes called "*ovarian apoplexy.*" It is probably greater when more blood goes to the genital organs, as in pregnancy, during sexual excitement, and when tumours are present. We have no exact knowledge as to what amount of follicular hæmorrhage occurs in health. Different investigators have tried to define it; and the largest quantity that anyone has thought normal is a drachm. A Graafian vesicle bigger than a cherry is seldom seen in a healthy ovary. Cases have been met with showing degrees of transition between slight hæmorrhage such as this in an otherwise healthy ovary, and fatal intra-peritoneal bleeding from diseased ovaries.

(*b*) *Multiple follicular hæmorrhages.*—The simplest deviation from the normal is when there is bleeding into many follicles in both ovaries. These multiple follicular hæmorrhages do not form multiple corpora lutea. The corpus luteum is a stage in the life-history of a follicle, not a result of hæmorrhage. These hæmorrhages are most frequently caused by one of those febrile infective diseases in which there is a tendency to hæmorrhage: enteric, small-pox, measles, acute pneumonia, cerebro-spinal meningitis. Other causes assigned are poisoning with antimony or phosphorus; also extensive burns of the skin and sunstroke. The uterine hæmorrhage associated with these conditions has been called "uterine epistaxis."

This kind of hæmorrhage, although pathological and related to the kinds to be subsequently described, yet either

causes no symptoms at all, or, if there be any, the graver symptoms of the disease causing the ovarian hæmorrhage lead to the symptoms connected with the ovaries being overlooked. Such hæmorrhage has never been recognised during life and therefore never treated.

(*c*) *Ovarian blood cysts.*—Bleeding may take place into a follicle and the follicle may not burst. The only reason we know of why it does not burst is that its wall is unusually tough; but we know not why it is so tough. The bleeding into the follicle may be unusual in amount. Other follicles, instead of bursting on the surface of the ovary, may burst into this cavity. From the combination of these conditions, a blood cyst of the ovary arises. The ovary has been found as large as a billiard ball, an orange, a fœtal head,* and even a man's head.† Such distension of the ovary causes pain. Enlargement of the ovary of this kind is so rare that we know not how clinically to distinguish a blood cyst of the ovary from (*a*) an ordinary cystic tumour of the ovary or (*b*) a distended Fallopian tube. The clinical course of such cysts may be one of three: (1) the blood may be absorbed; (2) the ovary may burst; (3) the cyst may go on getting bigger by successive bleedings into it and then burst.

(*d*) *Bursting of ovarian blood cysts.*—When fresh hæmorrhage takes place into a blood cyst, the cyst may burst, and bleeding take place into the peritoneum. If the bleeding be not great, the blood clots and forms a lump. The patient complains of pain, and the morbid condition detected is the lump formed in the ovary and the clotted blood round it.

But hæmorrhage from the rupture of such a blood cyst may be so great as quickly to kill the patient. Scanzoni‡ relates the case of a girl aged eighteen who died "with all the signs of an internal hæmorrhage." Seven pounds of blood were found in the peritoneal cavity; this had come from a pocket the size of a hen's egg in an enlarged ovary, in which there was a rent nearly an inch long.

These cases are so rare that we know nothing about the causes which lead to rupture. There are no signs or symptoms from which in a case of great intra-peritoneal

* Doran, "Obst. Trans.," vol. xxxii. † Boeckel, quoted by Rollin, op. cit.
‡ "Diseases of Females," trans. by Gardner, p. 406.

hæmorrhage we can say that the bleeding comes from rupture of an ovarian blood cyst.

(*e*) *Rupture of an ovarian cyst.*—A cystic ovary may rupture. If the cyst wall is not vascular and the cyst contents are not irritating, no harm will follow. But if the cyst wall be very vascular fatal hæmorrhage may take place. Matthews Duncan* relates an instance of this. Rickards† has published a case of fatal intra-peritoneal bleeding from rupture of a cancerous tumour involving ovary and uterus. Bleeding may take place into the cyst, distending it, and if the cyst gives way the bleeding may go on after the cyst has burst, and the patient may die from hæmorrhage. If the cyst contents are irritating or infective, fatal peritonitis may follow.

In a case of rupture of an ovarian cyst, the patient may, before the bleeding took place, have been told that she had a tumour, or noticed that her belly was getting big. But as at the present day a patient who is found to have an ovarian tumour is advised to have it removed without delay, this is not likely to be the case. Hæmorrhage into a cyst is attended with pain from tension. If there is a previous history pointing to the presence of a cyst, it may be possible to diagnose its rupture; but, as a rule, the symptoms will be those caused by internal hæmorrhage, without anything to show the cause of the bleeding.

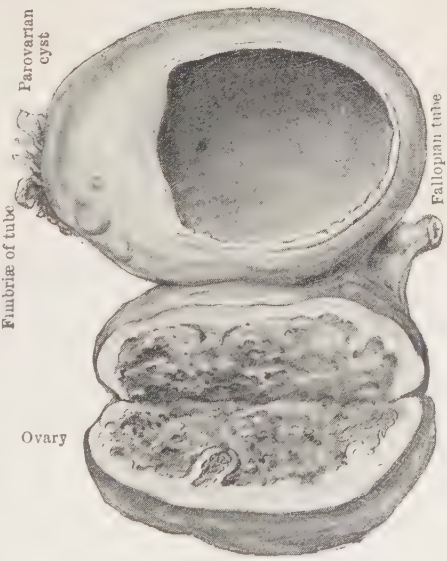


Fig. 97.—Interstitial hæmorrhage into ovary. (*Royal College of Surgeons' Museum*, 4548.) (*Reduced.*)

(*f*) *Interstitial hæmorrhage into the ovary and rupture.*—These cases are very rare. The blood so swells up and

* "Clinical Lectures," 4th edition, p. 395. † *Lancet*, Dec. 28, 1876.

discolours the ovary that it looks like a mass of black clot, and can only be identified as the ovary by its anatomical relations. I have placed such an ovary in the Museum of the Royal College of Surgeons* (Fig. 97). In a case quoted by Bernutz and Goupil† the ovary is described as "exactly like the spleen of a person who had died from scurvy";

Fig. 98.—Diagram illustrating rupture of interstitial pregnancy. (*Lawson Tait.*)
A, uterine cavity; B, Fallopian tube; C, part of uterine wall bounding gestation sac; D, place of rupture.

it had ruptured; three pints of blood were found in the peritoneum, and the patient died without recovering from the collapse which the bleeding caused. Laugier‡ describes the case of a cow, in which the ovary was the size of a man's head, transformed into a reddish pap, like splenic pulp: the animal died from internal hæmorrhage, twelve litres of blood being found in the peritoneal cavity.

These cases of hæmorrhage from a ruptured ovary are so rare that we know nothing about their pathology. It has been thought that they may arise from disease of the blood or blood-vessels, such as purpura or scurvy; but in the

* No. 4548 C. † "Diseases of Women," "N.S.S. Trans.," vol. i. p. 185.
‡ Quoted by Rollin, "Obs." xiii.

cases recorded there is no statement that any such disease was present. They may be due to rotation of a slightly enlarged ovary, so as to twist the broad ligament and hinder the return of blood from it. In my case the ovary was above the uterus, and the broad ligament was twisted; but in the

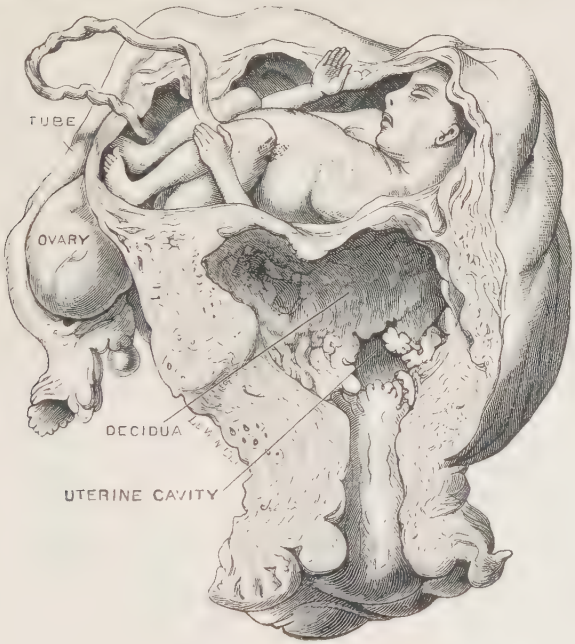


Fig. 99.—Case of interstitial pregnancy. (*Bland-Sutton.*)

other cases no such thing was noticed. Harold Wilson* has published cases of hæmorrhage into the ovary, in some of which the bleeding was into the stroma, and the cause not discovered. I think there is no doubt that fatal hæmorrhage from a ruptured ovary into the peritoneal cavity may take place.

There is only one treatment which can save life in these cases. It is to open the belly, remove the effused blood, bring out the diseased ovary, tie its pedicle, and cut it away. After this, if the patient be very prostrate, revive her by the intravenous injection of saline fluid.

3. **Rupture of the gravid uterus.**—Rupture of the

* *Lancet*, May 26, 1906, p. 1462.

uterus during pregnancy, before labour, is rare. Sometimes the rupture takes place because the pregnancy is interstitial; that is, in the part of the Fallopian tube which traverses the uterine wall (Figs. 98, 99, 100). But rupture of the uterus in apparently normal pregnancy may take place. Robert Barnes* quotes five instances of this. Three of these I cannot find in the volumes to which Barnes refers. In one† the patient was in labour, and version had been performed. The remaining case‡ seems genuine. It is said that the uterus did not at any part bear the least appearance of

Fig. 100.—Case of interstitial pregnancy. (*Doran.*)

thinning or disease: the rent was across the fundus; the pregnancy had advanced to the fourth month. Another case is recorded by Jellinghaus.§ These cases establish the possibility of spontaneous rupture of the uterus during pregnancy.

Pregnancy in a rudimentary uterine cornu. -Pregnancy may take place in the imperfectly developed horn of a bicorned uterus. The horn may consist of an imperfectly developed uterine body, the cervix being represented only by a bundle of fibrous tissue (Fig. 101). Such a pregnancy is

* "Obstetric Operations." † Mitchell, "Obst. Trans.," 1870.

‡ McKinley, *Glasgow Med. Journal*, vol. ix. p. 324.

§ "Arch. für Gyn.," Bd. liv.

clinically the same thing as a tubal pregnancy: it usually ends in rupture into the peritoneal cavity at about the fourth or fifth month, but the child may die and be retained within the abdomen for an indefinite time. It can only be distinguished from tubal pregnancy by looking for the insertion of the round ligament. In this condition the round ligament is inserted outside the pregnancy; in tubal pregnancy inside it. The pregnancy is in the uterus, but not in the normal place; it is not extra-uterine, but it is ectopic. I know of no case in

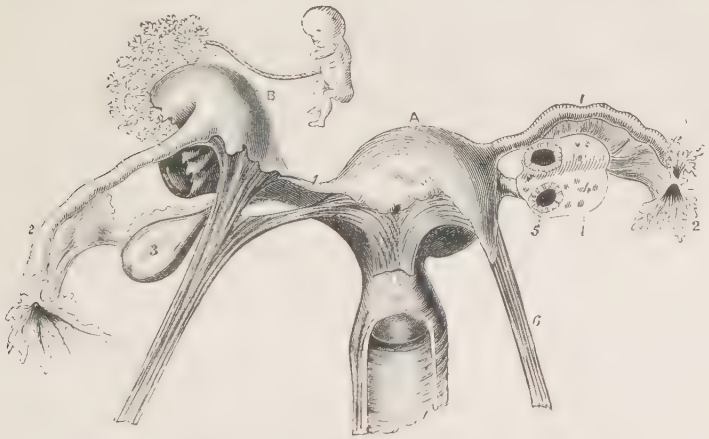


Fig. 101.—Pregnancy in a rudimentary uterine cornu. (*Luschka.*)

A, developed uterine cornu (right); B, rudimentary uterine cornu (left), with a rent, through which the fœtus has escaped; 1, right Fallopian tube; 2, left Fallopian tube; 3, left ovary; 4, right ovary; 5, corpus luteum; 6, round ligament.

which cornual pregnancy has been correctly diagnosed during life or before operation. In the early weeks these cases exactly resemble tubal pregnancy. Later on they have been taken for fibroids or ovarian cysts. A history pointing to pregnancy might in such a case suggest the real condition; but cornual pregnancy is so rare that the mistake of overlooking it is pardonable.*

Treatment of great intra-peritoneal bleeding.—From the foregoing account of the causes of great hæmorrhage into the peritoneum in women, it will be seen that in all of them the treatment is to open the belly, find the cause

* *See* Maniene, "American Journal of Gynecology and Obstetrics," vol. xv., Sept., 1899, p. 212.

of the hæmorrhage, and deal with it in such a manner as to make the patient safe from further hæmorrhage.

This operation must be done at once. In most abdominal operations the prospect of recovery is so much greater if the operator be experienced, that a medical man not in the habit of operating ought to leave the operation to an expert. But with great bleeding into the belly, the danger from delay is greater than that from want of experience in the operator; for in most such cases the operation is easy, and if done early, and with clean hands and instruments, will be successful.

How to do the operation.—The instruments required are the same as for ovariotomy, except the trocar. One assistant, beside the anæsthetist, is needed. Make a three-inch incision in the linea alba, midway between pubes and umbilicus. Insert two fingers and feel for the body of the uterus. This will guide you to the broad ligaments. Pass the fingers outwards, along each ligament. If you feel any abnormal condition, lift the part up, bring it out at the wound and look at it. If there be a tubal gestation, or a ruptured ovary, or a hole in a vein, transfix the ligament between the diseased part and the uterus with a double ligature. See that the two ligatures cross one another so as to interlock. Tie each separately. Cut away the diseased part. Now sponge out the effused blood, and wash the seat of operation with sterile normal saline solution.

In rupture of the uterus during pregnancy, the proper treatment is to open the belly, cleanse the peritoneum, and either sew up the rent in the uterus, or, if the rent be confined to the uterine body, amputate the body of the uterus. This has been successfully done by Jellinghaus.* In the rare case of *rupture of an interstitial pregnancy*, if you sew up the rent in the sac you have no security that discharge will escape into the uterine cavity; it may, instead, distend the sac and break down the stitches. Therefore in this case amputation of the body of the uterus is the better practice. The mode which, in the hands of experts, gives the best results, is first to tie the broad ligaments, next to tie the uterine arteries, then to cut off the body of the uterus, suturing (or not) the peritoneum over the stump.

* "Arch. für Gyn.," Bd. liv.

CHAPTER XX.

PELVIC HÆMATOCELE.

When bleeding from vessels in the pelvis is not so great as to threaten life by its amount, it causes pain, and the blood when it has clotted forms a lump. Such a lump is commonly called a *hæmatocele.*

Hæmatocele more than a symptom.—It is sometimes said that pelvic hæmatocele is a symptom, not a disease. It is more than a symptom, it is a morbid change which produces symptoms and signs of its own. It is true that it is not a primary morbid change, but an effect secondary to other changes, and that the primary changes may be different in different cases. But a hæmorrhage within the pelvis is none the less a distinct and important morbid change.

Nomenclature.—Lumps made of clotted blood have been called by different names. Let us be clear what these names mean. Internal bleeding from the vessels of the female genitals may be in one of three places: (1) into the peritoneum; (2) into the cellular tissue under the peritoneum but above the deep pelvic fascia; (3) into the cellular tissue below the deep pelvic fascia. When swellings made of clotted blood above the deep pelvic fascia were first recognised clinically, they were called "*hæmatoceles.*" Those who first invented this term, applied it to bleeding either (1) above, or (2) below the peritoneum. The clinical differences between these two kinds of hæmatocele, the (1) intra-peritoneal and the (2) extra-peritoneal, have only lately been pointed out. Effusion of blood below the deep pelvic fascia extends down into the vulva and has long been known as pelvic *hæmatoma.* It has been proposed to apply the term "*hæmatocele*" to hæmorrhage into the peritoneum, and call hæmorrhage into connective tissue "*hæmatoma.*" But I think we may as well describe two kinds of hæmatocele and one of hæmatoma, as one kind of hæmatocele and two of hæmatoma. Therefore I keep to the old nomenclature.

Intra-peritoneal hæmatocele means a lump formed of clotted blood in the pelvic part of the peritoneal cavity.

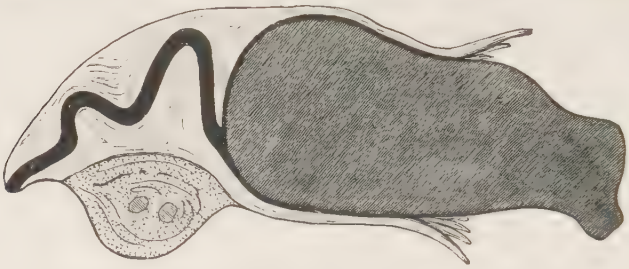


Fig. 102.—Diagram illustrating process of tubal abortion. (*Martin.*)

Causes of intra-peritoneal hæmatocele: 1. **Tubal pregnancy.**—The most common cause is *tubal pregnancy*. The formation of a tubal mole has been described in the previous chapter.

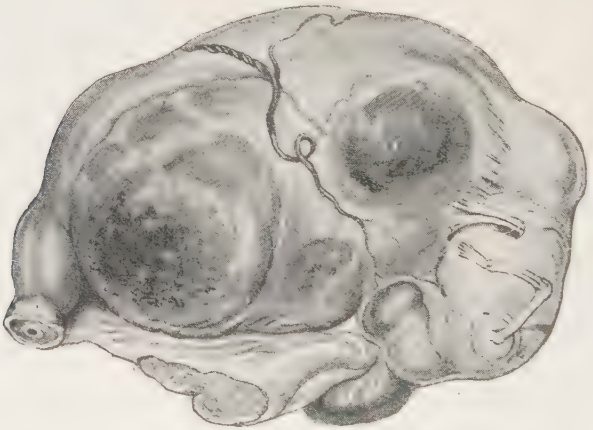


Fig. 103.—Tubal mole, external aspect. (*Cullingworth.*)

Before abdominal section was frequently done, tubal moles were unknown, while ruptured tubes, obtained *post mortem*, abounded in museums. The inference I draw is that tubal abortion often ends in spontaneous recovery.

2. **Disease of the ovary.** — Pelvic hæmatocele may come from the ovary. In the previous chapter I have described the conditions of the ovary which cause hæmorrhage. There is physiological bleeding, not enough to give

trouble, into the Graafian follicle with ovulation. It has been supposed* that this physiological congestion may, by accidental causes acting shortly before the time of ovulation, be so increased that the bursting of a Graafian follicle will cause bleeding enough to form a hæmatocele. This is theory: there is no evidence that a healthy ovary ever bleeds enough to form a hæmatocele. There is hæmorrhage into many follicles of the ovaries occurring as a minor incident in the course of the acute infective diseases. I know

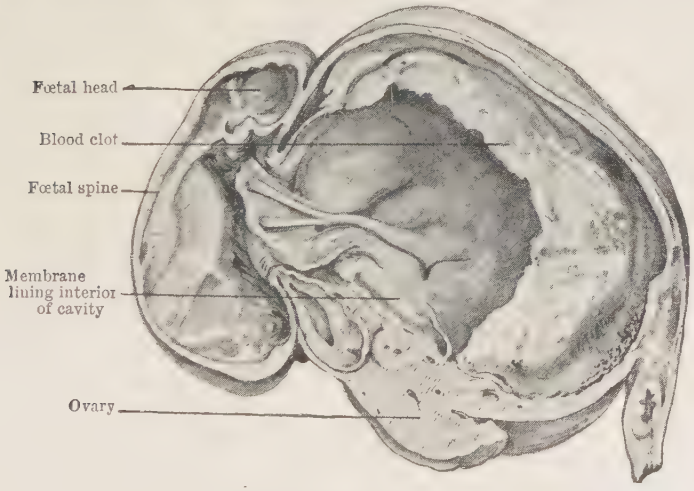


Fig. 104.—Tubal mole (Fig. 103) on section. (*Cullingworth.*)

no evidence that such bleeding ever makes its way into the peritoneum. There is hæmorrhage into and rupture of ovarian cysts; and there is interstitial hæmorrhage into the ovary leading to its rupture. These two last-named conditions we know, from *post-mortem* evidence, may cause fatal hæmorrhage. They may sometimes be the source of bleeding which stops before the patient's life is in danger.† If so, the blood clots, forms a lump, and finally is absorbed, unless the disease of the ovary should lead to further trouble.

We know nothing as to the symptoms which these conditions cause when they do not cause bleeding; and therefore

* *See* Bernutz and Goupil, N.S.S. Translation, vol. i. p. 181.

† *See* W. Duncan, "Obst. Trans.," vol. xxviii., 1886, p. 210.

in hæmorrhage from such conditions, we cannot diagnose the cause of the bleeding without opening the belly. In slight cases there is no reason to do this.

3. **Reflux from uterus, or bleeding from inflamed or congested tubes** (?)—"*Metrorrhagic hæmatocele*" is a term applied by Bernutz and Goupil to cases in which they found bleeding into the peritoneum along with bleeding from the uterus, as, for instance, from abortion. They supposed that some of the blood escaped by the vagina, and

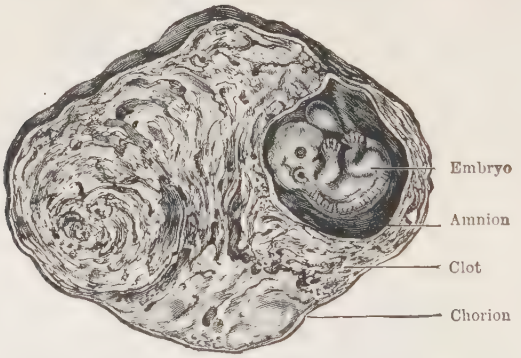


Fig. 105.—Tubal mole on section. (*Bland Sutton.*)

some ran along the Fallopian tubes into the peritoneum. Bernutz and Goupil added so much to our knowledge that any opinion of theirs is worth careful consideration. But I think it doubtful whether regurgitation of blood through the tubes ever takes place, for the following reasons: (1) The uterine opening of the tubes only admits a bristle, and it is unlikely that blood should flow this way when the cervical canal is open. (2) Cases have been observed in which a Fallopian tube was abnormally patent; but regurgitation of blood through these open tubes had not taken place. (3) It is only in recent years that Fallopian tubes containing blood have been carefully examined, and almost every Fallopian tube containing blood and having its abdominal end unclosed that has been well examined has been found gravid. This makes it probable that cases described, without thorough examination, as abortions with metrorrhagic hæmatocele, were tubal pregnancies in which the uterine

decidua was being discharged. (4) Hæmorrhage into the Fallopian tube has been observed when the uterine end of the tube was closed, and therefore the blood must have come from the tube itself.

I therefore am not satisfied that there is such a condition as metrorrhagic hæmatocele, meaning by that, hæmorrhage from the uterus escaping by the Fallopian tube into the peritoneum. I think that cases appearing to be such are either tubal gestation or cases of hæmorrhage from the tube itself, of unknown causation. An inflamed Fallopian tube may bleed; but hæmorrhage into the tube is less common than inflammation, and we know not what kinds of inflammation of the tube are apt to cause bleeding.*

4. **Acute diseases.**—In some *blood diseases* of which a tendency to hæmorrhage is a symptom, the Fallopian tubes may bleed. Bleeding into the peritoneum has been found in fatal cases of measles, purpura, scurvy, acute atrophy of liver, phosphorus poisoning, and yellow fever. The symptoms of this kind of intra-peritoneal bleeding are less striking than the other symptoms of the disease to which the hæmorrhage is due; therefore it is only found out after death. The bleeding is seldom enough to endanger life. If it kills, it does so by causing fatal peritonitis. If the patient survived the hæmorrhage and the disease which caused it, the clotted blood would form a tumour to which the term intra-peritoneal hæmatocele would be applicable.

5. **Perimetritis.** — In *post-mortem* examinations of patients, the subjects of chronic perimetritis, it is common to find blood in some of the spaces bounded by adhesions. This blood comes from rupture of the thin-walled new vessels in recent adhesions. This intra-peritoneal bleeding is an incident in the course of perimetritis, and does not materially modify its symptoms or course. Such bleeding is never great, for the vessels opened are not large, and the bleeding is limited by the pressure of the adhesions bounding the space into which the blood is poured out. The symptoms of pelvic inflammation are more marked than those of

* For a series of carefully examined specimens of hæmorrhage into the Fallopian tube, most of them with intra-peritoneal hæmatocele, *see* Cullingworth, "St. Thomas's Hospital Reports," vol. xxi.

internal bleeding. An intra-peritoneal bleeding of this kind is not found out till the swelling is opened, either during life or after death.

In brief, intra-peritoneal hæmatocele is generally due to tubal pregnancy. Apart from this, it is either an accident of some other disease more important than the hæmatocele, or secondary to a rare morbid condition which cannot be diagnosed.

Symptoms and signs.—The lumps of clot in the pelvic peritoneum which we call *hæmatoceles* cause pain. The pain comes on suddenly, with faintness and pallor, and sometimes vomiting; but it does not produce enough blanching to strike an observer who did not know what the patient looked like before the bleeding; nor is the faintness commonly enough to make the patient at once send for a doctor. The patient lies down, and expects the pain to pass off; she calls in the doctor when she finds the pain does not subside. The pain is in the lower belly, and, like most pelvic pains due to bilateral lesions, is worse on the left side.

A doctor who examined the patient immediately after the onset of symptoms would find no physical signs. A lump is felt when the blood has had time to clot; not before. The blood first lies about the Fallopian tube whence it came, and then trickles down into Douglas's pouch. Hence the lump of clot is behind the uterus. If there is enough of it to fill the posterior half of the pelvis, the bulk of the clot is in the middle. If less than this, there is more of the lump on one side than in the middle line. The lump is tender. When the clot is big, it pushes the uterus a little forwards; not much, because the uterus affects the position of the clot more than the clot that of the uterus. The clot in Douglas's pouch restricts the mobility of the uterus, and presses on the rectum, and this causes a good deal of rectal tenesmus and pain in defæcation; and if the lump is big, some catarrh of the rectal mucous membrane is produced. The lower belly is often tender. The clot may irritate the bladder, and cause frequency of, and slight pain in, micturition. If there should be adhesions above the pelvis, the bleeding may much displace the uterus, pushing it forwards against the pubes, compressing the urethra, and causing

retention of urine. Such displacement as this only happens when the blood is effused under pressure; it is rare from intra-peritoneal hæmatoceles.

Diagnosis.—A hæmatocele forms a fixed lump behind the uterus. The physical signs are the same as those of a lump formed by inflammation of the peritoneum around the ovary and tube. The lump made of blood clot is distinguished from an inflammatory lump by the way in which the illness came on. This you have to learn from the patient or her friends; and as their account is not always clear, you often have to be content with a conjectural diagnosis. Instead of shivering and febrile symptoms, and pain afterwards developing, the blood tumour comes on with sudden pain, faintness, and pallor. If the bleeding be a result of tubal gestation, it may have been preceded by amenorrhœa, with the subjective symptoms of pregnancy. The conjectural diagnosis from the history is confirmed by the clinical course observed. In the course of a few days or weeks the lump gets smaller, firmer, and irregular on the surface, instead of convex; the uterus becomes more movable, and at last the lump is no longer felt.

It is difficult—sometimes impossible—to distinguish a small effusion of blood around the end of a Fallopian tube from an effusion into the tube (hæmato-salpinx). In the present state of our knowledge, the diagnosis is not important, as the same principles of treatment apply in either case.

Prognosis.—The prognosis in a case of intra-peritoneal hæmatocele is uncertain. It depends upon the cause of the bleeding. If this comes from a growing tubal gestation, there will be more bleeding; if from a tube containing a mole, this may suppurate;* if from an inflamed tube, this may, by keeping up pelvic inflammation, make the patient a chronic invalid; if from a diseased ovary, this may bleed again, or become inflamed. An intra-peritoneal hæmatocele should therefore make you carefully watch the case lest there be dangerous disease of the tube or ovary. On the other hand, many cases of intra-peritoneal hæmatocele end in recovery by gradual disappearance of the lump

* *See* case by Remfry, "Obst. Trans.," vol. xxxvi. p. 261.

without bad symptoms. Our clinical knowledge of the conditions which cause intra-peritoneal bleeding is still so recent that (with the exception of some cases of extra-uterine gestation) we cannot yet diagnose them with accuracy, nor do we know the relative frequency of the different endings of such cases.

Treatment of intra-peritoneal hæmatocele.—There are two methods of treatment: 1. Expectant: leaving the case to nature. 2. Operative: removing the blood and the diseased ovary or tube whence it came. An operation on the peritoneum involves so much suffering, mental and physical, and so many sacrifices on the part of the patient, to say nothing of the immediate and remote dangers, that it is far better for the patient to get well without it if possible. Therefore, so long as there is nothing more than a small lump in the pelvis, presumed to consist of blood-clot, let recovery go on without interference.

Expectant treatment.—This consists in keeping the patient in bed and on liquid diet until it is clear that the blood is being absorbed, and that therefore further hæmorrhage is not to be feared. Order this regimen so that as far as possible the circulation may be slowed, pressure in the blood-vessels diminished, and bowel irritation lessened. There is no drug that will hasten the absorption of blood. If the bowels are confined, a laxative will be good. If the patient is in much pain, she may need a dose of morphia. If the case goes on well, the lump that you feel by the vagina will soon get harder and smaller, its convexity will become changed into irregular concavities, and the local symptoms will cease. As soon as it is clear that the case is taking this course, let the patient get up and take her ordinary diet.

If the lump is not distinctly smaller within a fortnight, if pain continues, other symptoms may show themselves. These may be of two kinds: (*a*) those of renewed bleeding; (*b*) those of inflammation. The advent of either shows that the cause of the bleeding was not a condition which was temporary and is past, but one still active. If so, the best practice is to anticipate further trouble and remove the diseased part. It is true that if there be a growing tubal gestation, the fresh hæmorrhage may kill the embryo, but not its mother. True also

that an ovary which is inflamed or infiltrated with blood may become shut off by adhesions, and so rendered harmless. But we cannot be certain of these favourable endings. Pain may make the patient an invalid for months. The risk of an operation done early, before the parts have been altered so that their recognition and removal are difficult, is slight. If there is within the belly a condition capable of causing bleeding or inflammation, the risk of ill consequences from early operation is less than the risk of leaving the disease. If left, an operation may after all be necessary, and the parts may then be in a condition unfavourable to the satisfactory performance of the operation.

In short, operate not because there is a small clot of blood in the peritoneal cavity. But if there is reason to think that the condition which has caused bleeding and may cause further bleeding or inflammation is still present, or that the blood is not being quickly absorbed, open the belly without delay.

Surgical treatment.—Suppose (1) that attacks of pain with pallor and enlargement of the retro-uterine swelling indicate renewed hæmorrhage: or (2) that continued pain lays the patient up, or (3) with fever points to suppuration. The right course is to let out the blood and remove the disease which caused the hæmorrhage. There are two ways of doing this: (i) by the vagina; (ii) by the abdomen. When practicable, the vaginal route is the better. It leaves no scar in the belly wall. The blood is often enclosed in a space shut off by adhesions from the general peritoneal cavity. If it greatly displaces the uterus it is certain that it is encysted. If so, you can deal with it by the vagina without opening the general peritoneal cavity. The use of the vaginal method is limited by the size of the swelling. If this is so large that you cannot by the vagina reach to the top of it, the abdominal route is better, for by it you can see what you are doing, and deal with any condition that may be present.

In the cases now under consideration bleeding has stopped, and it is not imperative that the operation be immediately performed. If the abdominal operation be required, there is time to get a specialist and, as you cannot tell what condition may be met with, this should be done. I shall

consider the abdominal operative treatment of extra-uterine pregnancy in a subsequent chapter.

The vaginal operation.—Put the patient in the lithotomy position. Define the relations of the swelling to the rectum and vagina. Cut through the posterior vaginal wall for about an inch and a half from side to side at its most bulging part, and thus open the pouch of Douglas. With the fingers scoop out all the clot. Then bimanually feel the uterus, and trace outwards the Fallopian tube on each side. If the case be one of tubal abortion you will feel that on one side the tube is thickened, and by the pressure of the fingers you will be able to detach and get away the tubal mole. This I have done. Then thoroughly wash the cavity with a non-poisonous fluid, and lightly pack it with iodoform gauze.

It may be said, what if the bleeding comes not from a tube with an open end containing a mole, but from a small rupture of a pregnant tube? You cannot tell which condition may be present; but in a case of slight bleeding, it is more likely to be from a tubal abortion than from a ruptured tube. Were the condition a ruptured tube, it is possible that manipulation with the fingers might so injure the ovum as to put an end to its further development, and thus prevent further bleeding. But were this not so, and another attack of hæmorrhage obliged you to open the belly, the previous vaginal incision would not, if the part had been kept clean, materially affect the risk.

Extra-peritoneal hæmatocele.—This means bleeding into the cellular tissue beneath the peritoneum, but above the deep pelvic fascia. Its commonest cause is the rupture of a pregnant tube where it is not covered with peritoneum, but is in contact with the cellular tissue (Fig. 106). It sometimes happens after operations on the broad ligament, if a vessel underneath the peritoneum is injured without a breach of that membrane. Lawson Tait thought it common from sudden arrest of hæmorrhage from the uterus; but I am sure it is not common, and I doubt whether it is produced by this cause. I know of no other causes for it. I have published a case in which it was thought due to the hæmorrhagic diathesis;* but the effusion was very old, and may

* *Obst. Journal*, vol. v.

have been from extra-uterine gestation, the frequency of which was not known at that time.

Physical signs.—Bleeding in this situation takes place under pressure. The blood is confined above by the peritoneum, below by the pelvic fascia. It is poured out on one side. When there is enough to force its way across to the

Fig. 106.—Diagram illustrating modes of rupture of Fallopian tube. (*Lawson Tait.*)

The left-hand figure shows rupture of tube on its peritoneal aspect: the right-hand figure rupture of the tube at the part in contact with the cellular tissue of the broad ligament. B, wall of tube; A, seat of rupture.

other side, it makes its way back by the side of the rectum to the pelvic wall. The shape of the blood effusion comes from its limits. Lawson Tait happily compared it to a jelly-fish, rounded above, concave below. The effusion seldom rises above the pelvic brim, but it may do so, and then it forms a rounded, well-defined tumour, over which, before the blood has clotted, fluctuation may be felt. Below, the mass slopes off downwards and outwards, feeling as if it merged into the pelvic wall. By the rectum, it will be felt as a half ring,

surrounding the rectum, and fixed to the pelvic wall on each side of it. If the effusion be great, this half-ring will considerably narrow the rectum, flattening its lumen from before backwards. This half-ring is characteristic of effusion into the cellular tissue. It is not, and cannot be, produced by effusion into the peritoneum. It is met with also in pelvic cellulitis, when this extends backwards, but when it is the result of inflammation, it does not narrow the rectum so much as when it is the result of hæmorrhage.

Clinical difference between intra- and extra-peritoneal bleeding.—The diagnosis between intra- and extra-peritoneal hæmatocele is important, because the clinical differences are great. Each is more often the result of extra-uterine pregnancy than of anything else. When the bleeding is into the peritoneal cavity, uneventful absorption of the blood may take place, but this is far from certain. It is probable that further trouble will follow, and if so, it will follow quickly. Such cases, therefore, always require careful watching, and often prompt operation.

When the bleeding is under the peritoneum there is no immediate danger. Death will not be caused by the hæmorrhage. Most cases end in subsidence of the symptoms and absorption of the blood. The remote risks are those incident to the development of an extra-uterine fœtus, of secondary rupture into the peritoneum, of suppuration of the sac, and other rarer accidents of ectopic pregnancy.

Treatment of extra-peritoneal hæmatocele.—The treatment of this kind of blood effusion is always expectant. As there is no immediate danger, there is no need for immediate operation. If danger should arise later, there will be ample warning.

While the patient is suffering from the shock due to the loss of blood and to the pain caused by the pressure of the effused blood, keep her in bed. If the pain be so severe as to prevent sleep, relieve it by morphia. If the patient be costive, give laxatives. Watch the course of the case by examining the lump at intervals of about ten days to see whether it is getting bigger or smaller. If the gestation has been arrested, the blood will be gradually absorbed. As soon as you find the lump getting smaller and more uneven, you

may with confidence let the patient get up, and tell her that further treatment is unnecessary. If the gestation has not been arrested, and the fœtus is developing underneath the pelvic peritoneum, then, although the symptoms will get better, the swelling will not get smaller, but larger, and the case ceases to be one simply of hæmatocele.

Part V.

HÆMORRHAGE.

CHAPTER XXI.

GENERAL CONSIDERATIONS AS TO UTERINE HÆMORRHAGE.

Great and slight bleeding from the uterus.—Cases of hæmorrhage from the uterus may be broadly divided into two classes—the *great* and the *slight*. By "*great*" hæmorrhage I mean bleeding which makes the patient anæmic. By "*slight*" I mean hæmorrhage which is more than the patient's ordinary menstruation, but which is not so great as to be serious by reason of the amount of blood lost. That which causes great bleeding may at first cause only slight bleeding. There are causes which may explain slight bleeding, but not great bleeding.

General causes of uterine bleeding.—Bleeding from the uterus comes from one of four conditions:—

1. More blood in healthy vessels.
2. Increase in size and number of the vessels.
3. Disease of the vessel walls.
4. Disease of the blood.

Of these conditions, the first, more blood sent through healthy vessels, does not cause great bleeding. With the second, increase in size and number of vessels, as in pregnancy and with new growths, bleeding may be great. The third, disease of the vessel walls, may cause fatal bleeding. The fourth, disease of the blood, such as scurvy, purpura, &c., may cause considerable hæmorrhage; but, as the same blood circulates all over the body, the uterus has in these diseases no monopoly of the bleeding; and therefore the diagnosis of the cause of the hæmorrhage is not difficult.

Causes of great bleeding from uterus.—The causes of great bleeding from the uterus (other than that caused by

injury) fall thus into three groups:—(1) New growths; (2) Morbid conditions arising out of pregnancy; (3) Disease of the blood vessels. New growths and the conditions arising out of pregnancy, alter the physical characters of the uterus and can thus be detected by the senses. Disease of the blood vessels may cause fatal hæmorrhage without any change in the uterus perceivable by the unaided senses.

Menorrhagia and metrorrhagia. — Systematic writers distinguish between *menorrhagia* and *metrorrhagia*, the former meaning excessive menstrual hæmorrhage, the latter hæmorrhage not limited to the time of menstruation. This is a theoretical distinction. It makes no practical difference whether the hæmorrhage observes monthly periodicity or not. Great bleeding is usually not limited to the time of menstruation.

How hæmorrhage is important.—Hæmorrhage is important for two reasons:—(1) Because when great or long-continued it makes the patient anæmic and thus deteriorates health and may endanger life. (2) Because it is sometimes the first symptom of malignant growth. The latter statement will immediately suggest an important practical question. When asked to treat a patient for uterine hæmorrhage, not enough to produce anæmia, ought you to insist on vaginal examination? If the patient has had children, you should insist on a vaginal examination; for slight hæmorrhage may be the first sign of cancer of the cervix. In virgins cancer of the cervix is so rare and the objections to vaginal examination are so weighty, that in such patients it is better to run the very slight risk of overlooking early cancer than to examine by the vagina.

When to dilate.—Suppose, now, that vaginal examination has been made and that neither by bimanual touch nor with the speculum can any evidence of disease be found. It is not possible to assert that there is no growth within the uterus without dilating the cervix. Is this necessary? It is not, unless simple treatment fails and the patient is becoming anæmic. The only reason for haste in diagnosis is the possibility of cancer of the uterine body and this form of cancer remains long before it so spreads that its removal is impossible.

CHAPTER XXII.

HÆMORRHAGE WITHOUT EVIDENCE OF PREGNANCY OR NEW GROWTH.

Slight bleeding without physical signs.—Suppose that you have either not examined, or that examination has revealed no signs of local disease. If the uterus is healthy and yet bleeds more than it ought to do, it is probably because more blood goes to it. What causes produce such afflux of blood?

1. **Fatigue.**—As from an overlong walk, too hard work, a too protracted active game. Such occupations accelerate the circulation and perhaps make the uterine veins too full, as they make varicose veins of the legs swell.

2. **Shock**: emotional or physical.—Just as emotion may make the face blush, so it may make the endometrium blush. The skin of the face does not naturally bleed, but the endometrium does. Violent exertion or an emotional shock, which makes the face red, may make the uterus bleed.

3. **Sexual excitement,** which provokes flow of blood to the genital organs.—Increased and prolonged menstrual loss, or even continuous hæmorrhage, not unfrequently follows marriage. Take care in a case of hæmorrhage following marriage to distinguish uterine hæmorrhage from bleeding from tears of the vaginal orifice. Inspection of the vulva will disclose the latter.

4. **Plethora.**—Some text-books give "*plethora*" as a cause of uterine hæmorrhage. Those who study general pathology say that there is no such thing as "plethora" (meaning by this too much blood; and I know not what other meaning it has). But passing this point, if the diagnosis were correct that "plethora" is the cause of hæmorrhage, it is clear that such bleeding is beneficial and should not be treated. I know nothing of "plethora."

5. **Passive congestion.**—Some text-books also say that

"*passive congestion*," as from disease of the heart, lungs, or liver, obstructing the circulation, may cause uterine hæmorrhage. Gow* has shown that heart disease does not do this; and the effect of the other conditions upon the uterus is probably like that of heart disease.

6. **Climate.**—Residence in tropical climates is said by those who practise there to make menstruation more copious and women more liable to hæmorrhage. I know of no observations as to whether very hot weather in England has a similar effect. West† mentions the case of a lady who, while resident in a damp part of Ireland, menstruated more profusely than at any other time.

Treatment of slight though unusual bleeding, without physical signs.—(1) In the treatment of the hæmorrhages caused by fatigue or shock, the chief thing is rest. Send the patient to bed. If she is restless and sleepless, as she is likely to be if over-fatigue or emotional disturbance has been the cause, lessen reflex irritability by giving bromides, the best being the sodium bromide, gr. xv. three times a day. Continue this treatment until the effects of the strain or shock have passed off, which will be in a few days. Then replace it by such advice as will enable the patient to avoid the recurrence of the cause of bleeding. Forbid alcohol, because it dilates the arteries. If erotic excitement be the cause, it will be discovered and remedied by conversation with the patient's husband. When the hæmorrhage is due to one of the causes mentioned above, ergot is unnecessary, for removal of the cause removes the hæmorrhage; but it is harmless, so it may be given. If the patient is being treated without local examination, ergot ought to be given, for you cannot be sure that a condition requiring it may not be present.

Slight hæmorrhage, with physical signs.—(2) There may be physical signs. One common cause of slight hæmorrhage from the uterus is that the organ is *retroflexed*, the bleeding being produced by obstruction to the return of blood from the body of the uterus, owing to the bending back of the broad ligaments so that the veins in them are compressed against the utero-sacral ligaments. I have described these

* "Obst. Trans.," vol. xxxvi.

† "Diseases of Women," ed. by Duncan, p. 54.

cases in Chapter XI. I estimate that in about one case of retroversion in ten hæmorrhage is produced in this way. To cure hæmorrhage thus caused, the uterus must be supported by a suitable pessary.

In *endometritis* and *salpingitis*, menstruation is often increased in frequency and amount. Some causes which make the blood flow to the uterus may set up endometritis and salpingitis; and in recent cases it is hard to draw a line between simple metrorrhagia and so-called endometritis; but it is of no practical importance that the line should be drawn. I shall describe the conditions which have been called endometritis in subsequent chapters. With early *ectopic pregnancy* there is usually hæmorrhage, greater in amount than that of ordinary menstruation and often dark in colour. Cullingworth believes that the dark colour of the blood is a valuable diagnostic sign: but I have not found it so

After labour, hæmorrhage often lasts longer than it ought to do, owing to deficient uterine contraction. The retraction and contraction of the uterus, which ought to go on during the lying-in period, compresses the vessels. If this be deficient, the uterine muscle receives more blood, absorption goes not on so fast as it ought to do and the uterus remains large. This is called *subinvolution*. The usual consequence of this change is that the woman menstruates more profusely than she did before. I have described it in Chapter IX.

Spontaneous dilatation.—There is such a condition as *spontaneous dilatation of the uterus* with hæmorrhage. The uterine cavity is dilated and bleeds when it contains an ovum, or remnants of ovuline structures, or a tumour; also in so-called endometritis. But in some cases there is neither tumour nor ovum nor endometritis. Such cases are very rare. They have been described by Matthews Duncan and I have met with them. We know nothing of their pathology. The uterine cavity may be so expanded as to contain a clot as big as a hen's egg; and the tubes seem to share in the dilatation, for attached to the uterine clots have been clots extending down the tubes. Many people would think these were cases of abortion in which the ovum had

been overlooked; a view negatived by the care which Matthews Duncan took to exclude this.

Great bleeding at transition periods without physical signs.—At the extremes of the reproductive period, when menstruation is beginning and when it is leaving off, it is common for hæmorrhage to be irregular, both as to time and quantity. The capillary circulation is late in development and early in degeneration, as evidenced by the liability in childhood to chilblains, epistaxis, and eczema; and in old age to arterio-capillary fibrosis and senile gangrene. The uterus develops later and retrogrades earlier than any other part, and during development and retrogression its capillaries, from imperfect development or from degeneration, may bleed. In some cases great bleeding occurs without any physical signs of disease of the uterus. Young girls sometimes have great bleeding from the uterus without any evidence of disease. Such bleeding has proved fatal, and careful examination of the uterus after death has failed to find any morbid change to account for the bleeding. Thus Matthews Duncan* says he has seen a young woman, who ever afterwards menstruated naturally, at the point of death from excessive hæmorrhage during her first menstruation. West † mentions the case of a young woman who died from uterine hæmorrhage (having been previously exhausted by sea-sickness), and at the autopsy "a small coagulum was found in the uterus, but nowhere was there any trace of disease." Barnes ‡ quotes the case of a girl aged fourteen and a quarter, "in whom the first menstruation set in violently and could not be checked. Everything was found healthy except the uterine mucous membrane, which was softened and ecchymosed and in some places detached from the muscular coat." Hæmorrhages without discoverable cause, so-called climacteric hæmorrhages, also occur at the other end of menstrual life.

So-called atrophic endometritis. — In some cases of hæmorrhage from the uterus in women near the menopause, when, after dilatation of the cervix, the uterine cavity is explored, no morbid change can be detected by the finger:

* "Clin. Lectures," 4th ed. p. 143. † "Diseases of Women," 4th ed. p. 65.
‡ "Diseases of Women," p. 90.

and if the curette is used, either no solid shreds at all are detached, or only few and small pieces. Microscopic examination of the little bits removed shows a firm stroma of spindle-shaped elements; few glands and those with narrow lumen and small epithelial cells; closed arteries with thick walls; here and there groups of broken-up nuclei taken to indicate places where glands had been. In some uteri examined after removal from the body during life or after death, the endometrium has been found very thin, presenting histological changes like those described above, with the addition that the columnar epithelium may be found changed into squamous, and in some places small cysts, formed out of blocked and dilated glands, exist.

Is this endometritis?—German writers call such cases *atrophic endometritis*. They think it is a final stage of endometritis which leads to atrophy. The only reason that I can find for this belief is that sometimes in the same case one scraping will bring away pieces showing signs of hyperplasia and catarrhal inflammation, another scraping nothing, or only pieces showing the signs of atrophy; and it is inferred that the scraping which brought away nothing, or a little piece showing signs of atrophy, was made at the place where the morbid change had gone on to atrophy. Now, unless we know exactly at what period of the menstrual cycle the examination was made, the fact of atrophy is not proved; for the mucosa is always thin at a certain time in the month. When patients are losing blood irregularly, they often lose reckoning of when menstruation ought to come on. But passing by this point, I know of no evidence that this atrophic condition is a result of inflammation. It is true that evidence is very difficult to get. But that is no reason for taking a theory to be fact without evidence. The term "atrophic endometritis" expresses a theory.

In these cases there is little or no pain. Leucorrhœa is not great; there is not the pink watery discharge of adenoma, nor the purulent discharge of endometritis. The patient's trouble is that she loses too much and loses too often. The bleeding makes the patient anæmic for a few days, but it is seldom enough to cause a high degree of anæmia.

Probably due to disease of blood-vessels. — These cases usually occur in women near the menopause. This fact, the insignificance of the appreciable local changes and the transitory success of local treatment, makes me think that the cause of the hæmorrhage is probably vascular degeneration. Degeneration of small blood-vessels occurs in old age; and in a woman at the climacteric the uterus has reached old age.

Palmer Findlay* has described arterio-sclerosis of the uterus, and collected many similar observations by others. But it is not possible to say that these changes are morbid and the cause of hæmorrhage until we know how often they are present without hæmorrhage. We need knowledge of the changes in the uterus due to age and child-bearing. Dr. Jessie Macgregor† has seen arterio-sclerosis in a childless woman of twenty-three, and says it is common in women between thirty and forty.

Is hæmorrhage beneficial?—The hæmorrhages that are sometimes attributed to plethora are allied to these bleedings. A great writer‡ thus states a view long generally held: "It seems in the first instance to be determined by an effort of the vascular system to unburthen itself of a superfluous accumulation. . . . It appears . . . in many cases to be beneficial. . . . It is an expression of constitutional or general vascular tension." The view here expressed, that hæmorrhage is sometimes beneficial, is in harmony with clinical experience, for certain disagreeable symptoms usually follow for a time the cessation of menstruation. And yet experimental pathology teaches us§ that there can be no such thing as plethora, that is, too much fluid in the blood-vessels; that when too much fluid is put into the vessels, fluid transudes from them until the tension is normal. If fluid is drained from the vessels, transudation into them from the tissues is increased. Possibly blood-letting does good by thinning the blood and so permitting fluid to pass from the tissues into the blood.

* *American Journal of Obstetrics*, July, 1905.

† "Pathology of the Endometrium," 1905, p. 36.

‡ Barnes, on "Diseases of Women," p. 86.

§ *See* Cohnheim's "Pathology," "N.S.S. Trans.," vol. i.

It appears to me that such hæmorrhages may reasonably be connected with changes in the blood-vessels too minute to be ascertained except by their effects. Like epistaxis uterine hæmorrhage is independent of any wound that we can discover. Mr. Jonathan Hutchinson* suggests that these apparently causeless hæmorrhages in women may be due to gout, since gout goes with a tendency to bleed. The signs which indicate the gouty diathesis are not definite enough to enable this hypothesis to be tested.

Treatment.—In these bleedings at puberty and at the climacteric, rest and the avoidance of alcohol are indicated, as in all hæmorrhages. There is no harm in giving ergot for excessive bleeding in young girls, but it is useless. I have found cannabis indica, recommended to me by Dr. Eustace Smith, effective. If drugs fail, the only treatment is the application of styptics to the uterine cavity. The least dangerous styptic, and therefore the one that I prefer, is the tincture of hamamelis. In the case of a virgin, inject an ounce through a hollow sound into the uterine cavity. In climacteric hæmorrhage give ergot. If this fail, combine with it digitalis, a drug introduced by Dr. Dickinson. The effect of digitalis in these cases seems allied to its effects in the degenerative change in the vascular system which brings about dilatation of the heart. If drugs fail, the cervical canal should be dilated and the uterine cavity explored; for without this measure you cannot be sure that there is not a small fibroid or adenomatous growth, or even commencing cancer. If, when this is done, you feel no new growth, scrape the interior with a blunt curette (for the cause of the bleeding may be disease of the endometrium) and then cauterise it. The best caustic is iodised phenol. This will almost always be followed by cessation or temporary diminution of hæmorrhage. Should it recur, as the absence of new growths has been made certain, you may inject tr. hamamelis into the uterine cavity. In cases at the climacteric age the uterus is an organ of little value to its owner: and therefore if the hæmorrhage is enough to make the patient pallid, and is not checked by treatment, the uterus may be removed.

* "Archives of Surgery."

CHAPTER XXIII.

HÆMORRHAGE WITH A ROUNDED TUMOUR IN VAGINA.

TAKE now a different case. The patient is anæmic, but not wasted. Abdominal examination reveals nothing abnormal. On vaginal examination, the finger encounters a firm globular

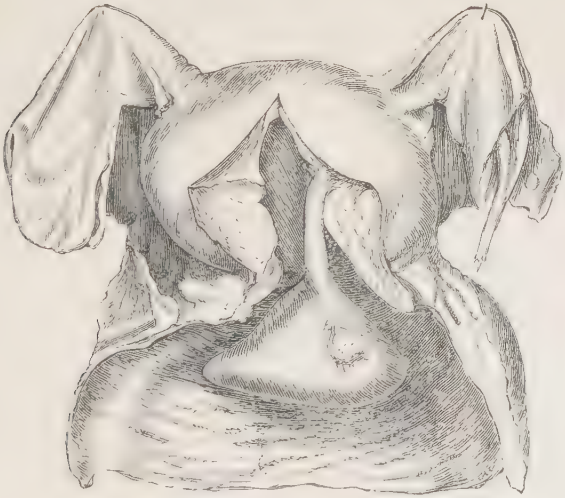


Fig. 107.—Polypus uteri. (*R. Barnes.*)

lump in the vagina, without any dimple in it that can be taken for the os. This may be one of four things—a fibroid polypus, a fibroid of the cervix, a sarcomatous growth, or an inverted uterus. The first of these is commoner than all the others put together.

Differential diagnosis.—Define the cervix uteri. A polypus has a stalk which is encircled by the cervix (Fig. 107). The tumour formed by an inverted uterus is also encircled above by the cervix (Figs. 108, 109, 110). In a fibroid or a sarcoma of the cervix, there is no ring encircling the tumour above. One side of the tumour is continuous with the vagina and on the other is the os uteri flattened into a slit.

Diagnosis between polypus and inversion.—Take first the tumour, which is encircled above by the ring of the cervix. If it be of about the size of the body of the uterus, it may be either an inverted uterus or a fibroid polypus. If it be much smaller or larger than this, it cannot be an inverted uterus. If the tumour is tender, be on your guard against overlooking inversion, for a fibroid polypus is not tender, but an inverted uterus is. An inverted uterus bleeds when handled, but a fibroid polypus does not; for the bleeding with a fibroid comes from the body of the uterus, not from the polypus. But rely not upon these

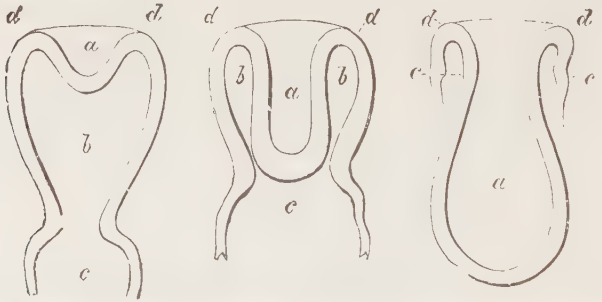


Fig. 108.—Diagram illustrating successive stages in the production of inversion of the uterus. (*Crosse.*)

a, inverted fundus; *b*, natural cavity; *c*, vagina; *d d*, upper margin of the cup formed by the inverted fundus uteri.

characters in diagnosis, for gentle handling of an inverted uterus may not produce pain or bleeding, and with a polypus a roughly made examination may produce both. The great difference between an inverted uterus and a fibrous polyp is this: that if the uterus is inverted, you cannot perceive the body of the uterus above the cervix, while if the tumour be a polyp, you can. The presence of the body of the uterus above the cervix is found out in two ways—first, by *bimanual examination*, you can get the uterus between the two hands; but if the uterus should be inclined backwards, you will press the uterus down and back, and the tension of the vaginal wall produced by the tumour in it may prevent you from feeling the uterus through the posterior wall. If you cannot feel the uterus by bimanual vaginal examination, try bimanual rectal examination. The finger in the rectum

can reach higher up than the finger in the vagina; and if the body of the uterus be present above the cervix, you will scarcely fail to perceive it. If your finger in the rectum and hand on the abdomen meet above the cervix, and feel the cervix like a ring, into which the rectal finger can be pressed

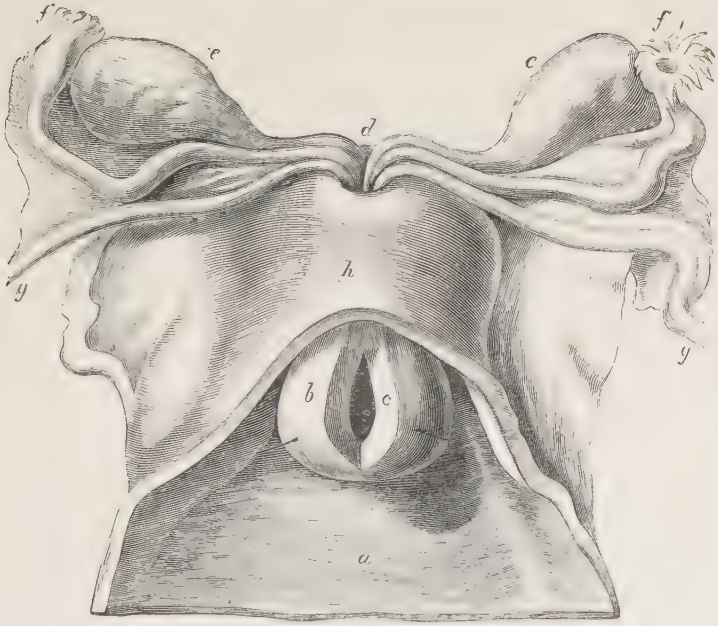


Fig. 109.—Inversion of the uterus. (*Crosse.*)

a, vagina; *b*, *c*, body of uterus inverted; *d*, neck of peritoneal pouch formed by inverted uterus; *e*, ovary; *f*, Fallopian tube; *g*, round ligament; *h*, peritoneum.

from above, the case is one of inversion of the uterus. But in very fat women or nervous women, who keep the abdominal muscles contracted, this method cannot be carried out unless the abdominal walls are relaxed by an anæsthetic. In such a case *pass the sound*. In an inverted uterus, the sound will enter the sulcus between the neck and the inverted body, passing about half an inch, but no farther. Move it round the stalk of the tumour and you find that nowhere will it go farther. If the tumour be a polypus, the sound will pass up by the side of the pedicle (for the pedicle dilates the cervical canal) for $2\frac{1}{2}$ or 3 inches. If the tumour spring from the uterus low down, the sound may be arrested by its pedicle.

It the uterus be inclined backwards, the instrument may not pass upwards and forwards. To avoid error from these conditions, if there be difficulty, pass the sound up on the other side of the pedicle and alter the direction of the sound. If the sound passes up two inches or more, the case cannot be one of inversion of the uterus.

Treatment of chronic inversion of the uterus. — The

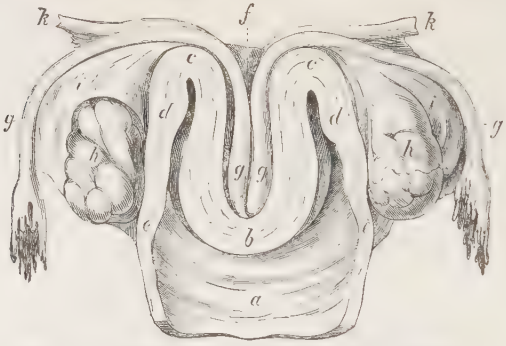


Fig. 110.—Inversion of uterus on section. (*Crosse.*)

a, vagina; *b*, body of uterus; *c*, line of inversion; *d*, cervix uteri; *e*, os externum; *f*, peritoneal *cul-de-sac* of inverted uterus; *g*, Fallopian tubes; *h*, ovary; *i*, broad ligament; *k*, round ligament.

treatment is its replacement by Aveling's repositor (Fig. 111). This consists of a waist-belt, which is prevented from slipping down by straps over the shoulders, and the repositor, which consists of a cup carried on a stem. The stem has a curve, which prevents it from pressing on the perineum; its lower end is in line with the central axis of the cup. To the lower end elastic bands are attached. Put the repositor in the vagina, so that the cup receives the fundus uteri in its concavity. Then, while an assistant holds the repositor in place, fasten the elastic bands to the waist-belt, pulling them as tight as you can, so that the force exerted may be the utmost tension of the elastic bands. The continuous pressure thus exerted usually replaces the uterus within forty-eight hours. If the cervix uteri can be dilated, inversion can be manually reduced. I have in a thin subject dilated the cervix by pressure through the abdominal wall, and then replaced the uterus. Others have opened the abdomen to do it. I think the use of Aveling's repositor is better than the latter course.

The only exception to the above statement is in the case of inversion associated with disease of the fundus uteri. I have published * a case in which a fibroid inverted the uterus, protruded outside the vulva and became gangrenous The gangrene spread to the uterus and killed the patient. In that case I regret that I did not remove the uterus.

How a submucous fibroid becomes a polypus.—When the thickness of muscular tissue between a fibroid and the uterine muscular tissue is less than that between the tumour

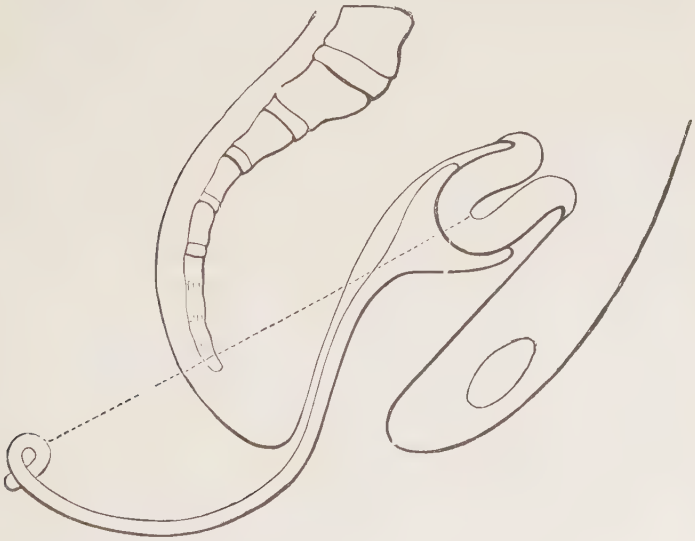


Fig. 111.—Aveling's repositor for inversion of the uterus.

and the serous covering of the uterus, it will be clear that when the uterus contracts the tumour will be squeezed less strongly on its mucous than on its serous aspect, and hence the effect of uterine contractions will be to press the tumour towards the uterine cavity. The more it protrudes into the cavity, the more will the layer of muscular tissue between it and the cavity be stretched, thinned and weakened, and the more easily will uterine contractions force the tumour farther into the uterine cavity. When the tumour so protrudes that its equator lies free in the uterine cavity, the uterine contractions tend to press it against the os internum,

* "Obst. Trans.," vol. xxx. p. 226.

so that it may dilate this orifice, and to expel it from the uterine cavity just as a baby is expelled. But the uterus cannot deliver itself of a tumour as quickly as of a baby or an abortion, because the tumour is held back by its attachment to the uterus. The efforts of the uterus tend to stretch and thin this attachment into a stalk. When this is sufficiently done, the tumour dilates the internal os and descends into the cervical canal. Then it dilates the external os and descends into the vagina. Having a stalk, it is called a "polypus": a uterine polypus from the place whence it grows, or an intra-cervical or intra-vaginal polypus from the place where it lies.

Production of inversion by a fibroid.—Generally this process stops when the tumour has got into the vagina; but sometimes, if the stalk of the tumour is very thick and strong, as the tumour is driven down it drags the fundus uteri after it. When it has dragged the fundus down through the internal os, then with each contraction the fundus itself will be nipped and forced farther down till the inversion is complete.

Structure of fibrous polypi.—Soft fibroids are too closely connected with the surrounding tissue to be thus expelled. The fibroids that are extruded as polypi are identical in structure with the hard nodulated fibroids of the uterine body. They often contain irregular spaces in their interior filled either with mucoid fluid or with blood. They are in the beginning covered with mucous membrane, which is the lining membrane of the uterus, that the tumour pushed before it. While the tumour is in the uterus, this mucous membrane is covered with columnar epithelium, like that of the uterine body; but when the tumour descends into the vagina, the disturbance in the circulation through it caused by the pressure of the cervix or vagina causes the mucous membrane at the lower part of the tumour to become swollen, œdematous, purple in colour, and ecchymosed. Further, friction against the vagina leads to transformation of the columnar into squamous epithelium, just as when the cervix is everted, the columnar epithelium of the lower part of the cervical canal often becomes changed into squamous. At a still later stage, when the

polypus is large, so that the mucous membrane at its most advanced part is far distant from its blood supply, the mucous membrane often atrophies. The stalk of the polypus may be of muscular tissue, or it may be only of mucous membrane and connective tissue. There may be large vessels in the capsule of the tumour, but there are hardly any large vessels in the stalk.

A foreign body in the uterine cavity provokes hæmorrhage and leucorrhœa, and, therefore, with fibrous polypi there is a history of great hæmorrhage and leucorrhœa. It takes time for the fibroid to be driven out from the uterine wall, through the cervix and down into the vagina, and therefore there is generally a long history of hæmorrhage and discharge. The contractions of the uterus are not painful, excepting in some rare neuralgic conditions, or when, as in labour, they are stretching open sensitive parts; and therefore severe pain is not present with a vaginal polypus, unless there be some complicating condition.

Characters.—A fibrous polypus (after removal) is a round, or more generally ovoid, being elongated by the pressure of the intravaginal canal) sweet swelling in size from that of a hazel nut to that of a fœtal head. I have never seen one smaller than a hazel nut, and a larger tumour than a fœtal head could not descend into the pelvis.

Gangrene.—The presence of a lump in the vagina often produces bearing-down efforts on the part of the patient, which may force the fibroid out of the vagina, so that it hangs outside the vulva supported by its pedicle. When this happens, the pedicle being not only stretched, but compressed by the vulval orifice, the circulation through it is impeded, and the polypus becomes congested, edematous, and therefore swollen and softened, and the circulation may be stopped altogether and gangrene result, beginning at the part farthest from the stalk and extending upwards. When the tissue is dead, micro-organisms are able to live upon it and so it putrefies. Thus we may find the patient with a soft, stinking mass outside the vulva, attached by a pedicle running up into the uterus. In such a case the patient may have fever from the absorption of chemical poisons produced in the dead tissue, and this may prove fatal. If the patient survive, the

polypus will be spontaneously separated and the patient will be cured. If the polypus be cut off, she will get well sooner.

Adhesions.—When the tumour is large, the pressure against the vaginal walls may destroy the epithelium both on the surface of the tumour and on the adjacent surface of the vagina, and the surfaces thus unprotected may adhere. Then you will feel a large rounded tumour like a cocoa-nut projecting into the vagina, but you will be unable to feel its stalk; you will find it over perhaps the greater part of its circumference united to the vagina. Such adhesion is not met with in small tumours. The size, the elasticity, the roundness of the tumour, the absence of any breaking down, will make you think it a fibroid; and knowing how commonly fibroids spring from the uterus, you will suspect it comes from the uterus and proceed to break down the adhesions. A vaginal fibroid lies under the mucous membrane and does not grow from it.*

Fibroid with inversion.—The only cause of inversion of the uterus that we know of, except parturition, is the traction of fibroids. Therefore, if your polypus has a very thick stalk, remember that although the polypus may be so big that the tumour cannot be an inverted uterus, yet that it may be attached above to the inverted uterus. Therefore if the stalk be very thick, or if when you proceed to cut the pedicle or to divide it with the écraseur, much pain is manifested, make sure by the sound and by bimanual palpation that no inversion is present. If with a polypus there is inversion of the uterus, carefully separate with fingers or blunt instruments the tumour from the uterus.

Multiple fibroids.—With a polypus in the vagina there may be other tumours projecting into the uterine cavity. If so, symptoms will persist until all the growths have been got away.

Polypus with prolapse. In some cases a fibroid, by its traction and the bearing down efforts it produces, causes prolapse of the uterus. This is the more likely to happen rather than inversion, the lower down in the uterus the tumour is attached. The kind of prolapse caused is remarkable in that

* For illustrative cases see W. Duncan, *Lancet*, 1885.

it is prolapse of the uterus alone, without the bladder or rectum. In the common form of prolapse it is the bladder that comes down first and drags after it the uterus.

The treatment of a fibroid polypus.—The treatment of a fibroid polypus is to remove it. The best way of removing it depends upon its size.

(1) If it be not larger than a Tangerine orange seize it with forceps having broad fenestrated and serrated blades, and twist it round until its pedicle is broken through. You can generally do this without a speculum; but if you find difficulty, expose the tumour with the duckbill speculum, and then you can easily grasp it.

(2) If the tumour is much larger than this, you may find that you cannot hold it securely enough with forceps, but that when you try to twist it off, the forceps slips. In that case, pass the index finger of your left hand up to the stalk of the tumour, and with it as your guide pass up blunt-pointed scissors curved on the flat, and cut through the stalk of the tumour. You will know when the tumour is loose by the freedom with which you can turn it round and round in the vagina. Then seize with a strong volsella and extract it.

(3) The tumour may be so large that you cannot get your finger up far enough to guide the scissors. In that case, pass the wire of the écraseur over the tumour, push the tip of the instrument as far up as you can and press the wire up over the greatest diameter of the tumour; then screw up the instrument. If the loop is past the equator of the tumour, as it is tightened it will slip up to the stalk of the tumour and then cut through the stalk. This done, you have to extract the tumour. If the vaginal orifice is large, you may be able to do this by pulling with a strong volsella. If the tumour is too big, and the vaginal orifice too firm for this, then pull the tumour down with a volsella, and cut out with scissors the piece which the volsella has grasped. Then seize and cut away another piece and thus remove the tumour in bits. Cases have been published in which the perineum has been torn in dragging out a large polypus; this is bad surgery.

(4) The tumour may be so large that your fingers cannot

reach its equator and therefore you cannot get the loop of the écraseur over it. Remove such a tumour by cutting it up in the manner just described. This is more easily done if the tumour has been made movable by dividing its stalk; therefore division of the stalk by the écraseur, if it can be done, is an advantage. A fibroid in the vagina is not very vascular and therefore the bleeding in cutting through its tissue is trifling. It is not necessary to do anything to the pedicle. The operation is a safe one, although if the tumour be large it is tedious and tiring to the operator.

Fibroids of the cervix.—Most uterine fibroids grow from the body, not from the cervix of the uterus. But a fibroid may grow in the cervix and may grow either outwards, projecting into the broad ligament towards the pelvic wall; or it may grow inwards, towards the cervical canal, in which case it projects inwards and downwards, its projection downwards being conditioned by the little resistance in the direction of the vagina. These tumours are always of the hard kind.

Cervical fibroids growing outwards. — While these tumours are small, they cause no trouble and there is no difficulty in their diagnosis. They are distinguished by their roundness, their hardness and their oneness with the cervix. But such a fibroid, if large enough to reach the pelvic wall, will form a lump which it may be difficult to distinguish from a mass formed by salpingo-oöphoritis, an abscess in the broad ligament, or malignant disease of an ovary. The diagnosis is described in Chapter XVII. If such a tumour goes on growing, it may push the uterus to the opposite side of the pelvis and become incarcerated in the pelvis. A fibroid so big as to do this will rise above the pelvic brim and be felt as an abdominal tumour. The diagnosis and treatment of such a condition I shall describe in a subsequent chapter.

Cervical fibroid growing inwards.—Such a tumour, bulging downwards into the vagina, if about the size of the uterine body, may be taken for inversion; and, whatever its size, care is needed to distinguish it from a polypus. It is not surrounded at its neck all the way round by the cervix uteri, as is a polypus or inverted womb. Its pressure

on the opposite wall of the cervix stretches this, and thus converts the os externum into a long slit, bounded externally by a narrow tense band of tissue. This slit may be difficult to feel, but if felt, the sound will pass into it for the full distance. Bimanually, the body of the uterus will be felt in its natural position above the tumour. If the tumour be big, it may be impossible to get at the neck, and then the diagnosis between cervical fibroid and polypus cannot be made; but here the size of the tumour will put inversion out of the question.

Such fibroids generally cause hæmorrhage, though not such great bleeding as fibroids growing from the uterine body. They cause leucorrhœa and sometimes bearing-down pain and frequency of micturition.

Fibroid of the cervix may be big. A large fibroid growing above the pelvic brim is prevented by its size from descending into the pelvis; but a cervical fibroid begins in the pelvic cavity, and if it grows too big to be accommodated within that space, it pushes the body of the uterus up into the abdomen. Bland-Sutton* has reported one which weighed nearly seven pounds and lifted the uterine body above the navel. Cervical tumours so large as this are rare. They generally cause symptoms before they get so big and as their diagnosis is not difficult they are generally found out.

Treatment of cervical fibroids.—The treatment of a fibroid of the cervix is to enucleate it. Make an incision over the face of the tumour which is turned to the cervical canal. Seize the tumour with a volsella and pull it down. Feel for the situation of the capsule and when you have found it, shell out the tumour with the fingers. This can usually be done. If you cannot find the capsule, or if the tumour is so big that you cannot be sure of its place of origin, cut more deeply into it, seize a piece with a volsella and cut it away with scissors; and thus removing bit after bit, you will come to the capsule and then be able to avulse the rest of the tumour.

Sarcoma of the cervix.—Sarcoma of the genital canal is a rare disease. It is commoner in children than in adults. In the adult it presents more than one form. It has been

* *Brit. Med. Journ.*, Oct. 31st, 1896.

seen as a flat, ulcerated new growth; as a papillary growth; and as a round lump like a fibroid. The latter is the form that here concerns us.

It attracts attention by causing hæmorrhage. With this there is some bearing-down pain, irritation of bladder, and smarting in making water. On examination, a firm, smooth, rounded, broad-based tumour is found growing from the cervix. It has generally been taken for a fibroid. The only differences that I know of are that a sarcoma is more vascular and quicker in growth. The greater vascularity makes it darker in colour, but the difference is not so constant and definite that you can base a diagnosis upon it. When you first see the patient you cannot know the rate of growth.

Treatment.—The tumour is easily enucleated. On section, its softness and vascularity may excite suspicion and lead to microscopic examination. If not, the nature of the tumour will be first revealed by its recurrence. It may be enucleated again and perhaps again; but sooner or later in its recurrence it involves the vagina and the broad ligaments, and runs the usual course of a malignant growth.* When the nature of the growth has been ascertained, extirpation of the uterus is called for. This operation would be preferable to amputation of the cervix, because sarcomata are often multiple. The disease is so rare that no observer has seen many cases; and in most the diagnosis has not been made early enough for this operation to be considered.

* *See* Rosthorn, "Wien. Med. Woch.," 1889.

CHAPTER XXIV.

HÆMORRHAGE CONNECTED WITH EARLY PREGNANCY.

Suppose now a different case. On abdominal examination, you find on deep pressure into the pelvic brim a swelling, which rises not much above it. On vaginal examination, you find nothing abnormal. By bimanual examination, you perceive that the abdominal swelling is continuous with the cervix, and that they both move together: movement imparted to the cervix is communicated to the abdominal swelling, and movement imparted to the abdominal swelling is shared by the cervix. These facts: that the cervix and abdominal swelling move together, and are continuous, prove to you that the swelling is *the body of the uterus;* and the fact that it can be felt by the abdomen is evidence that it is *enlarged.* We have then slight enlargement of the body of the uterus, accompanied with great hæmorrhage.

Causes of uterine enlargement with bleeding.—This enlargement may be due to—

Threatening abortion,
Molar pregnancy,
Retained secundines after abortion,
Cancer or sarcoma of the body of the uterus,
Adenoma of the body of the uterus,
Submucous fibroids.

In pregnancy and fibroids with hæmorrhage, the uterus may be much larger than the limits supposed in our imaginary case; but if so, the conditions from which they have to be distinguished are different, the points on which to rely in diagnosis are different, and the treatment is different. I postpone these cases. For the present, we will suppose enlargement of the uterus just perceivable by examination of the abdomen. A uterus enlarged by pregnancy or by retained secundines, by adenoma, by fibroids, by sarcoma, by cancer of the body, may be felt by the abdomen, but not in the last-named until the condition is far advanced.

Early pregnancy.—Abdominal examination reveals the tumour, but not its nature. Vaginal examination informs you that the cervix is healthy. If there be hæmorrhage, you had better not pass the sound. Bimanual examination will in some cases enable you to make the diagnosis. If the patient be pregnant, the uterus will be pear-shaped, not flattened from before backwards as in the unimpregnated state, and it will be elastic and symmetrical. If the uterine enlargement is not pear-shaped, if the cervix is enlarged as well as the body, if the uterus is not elastic, but hard, if it is bulged out in irregular nodosities, then the case is not one simply of pregnancy. There is a kind of fibroid enlargement, which Lawson Tait described as "concentric," which consists in a thickening all round the uterine cavity, and in which the shape may not differ from that of pregnancy. The body of the uterus may be enlarged by a single fibroid bulging into its cavity, and then the shape may not appreciably differ from that of a pregnant uterus. In uterine enlargement such as this the consistence of the cervix helps you. In pregnancy it is softened; in fibroids it is not. But this sign requires some experience to appreciate, especially as at the early period of pregnancy to which this degree of enlargement corresponds, the softening is not so marked as it afterwards becomes. Hegar has described as a sign of pregnancy a character of the uterus that results from this softening: viz. that the tissue near the internal os is so softened that the globular swelling of the uterine body may feel as if it were almost disconnected from the cervix uteri. The colour of the cervix may help. In pregnancy it goes on getting deeper red throughout, till at the end it is a dark bluish purple; in fibroids it is the same colour as the buccal mucous membrane. But at this period of pregnancy the deepening of colour is but slight, and if the patient has lost a great quantity of blood, her anæmic condition may make the cervix pale. The history may suggest a diagnosis. In fibroids it will be of hæmorrhages. In pregnancy there ought to be a history of amenorrhœa, morning sickness, &c., followed by hæmorrhage. But the bleeding may have begun as early as the end of the first month of pregnancy, and been frequently repeated, so that

the history of amenorrhœa may be wanting. And further, it has happened that a patient wishing to have abortion induced, has gone to a medical man with a fabricated history of hæmorrhage. Therefore you cannot make a diagnosis from the history: all that this will do is to tell you in what direction to begin your investigation.

If cervical canal open.—If, although the vaginal aspect of the cervix is healthy, yet you can get your finger into the os uteri, then press the uterus down on to your finger with the abdominal hand. You may feel the soft bag formed by the ovum. If you find that the canal leads to a cavity with ragged walls, there is cancer or sarcoma of the uterus. If there is a tumour bulging into the upper part of the canal, it may be a fibroid, a sarcoma, or an adenoma. But cases are rare in which without first dilating the cervix, you can get your finger far enough to make a diagnosis. The history is not enough for diagnosis in cancer or sarcoma. In cancer there will probably be discharge, pain, and wasting; but there may be these symptoms with a fibroid or with pregnancy.

Dilatation of cervix.—In copious hæmorrhage with enlargement of the uterus, the proper course is to *dilate the cervix*. If the hæmorrhage be not so copious as to alter the patient's colour, you may give ergot first if the patient is adverse to local treatment; but if this fails, or if the hæmorrhage is so great as to weaken the patient, time should not be wasted, but the cervix dilated at once.

How to dilate the cervix.—There are two ways of dilating the cervix of the unimpregnated uterus: a rapid method by Hegar's dilators, and a slow method by tents. The rapid method has the advantage that the whole thing is done at one operation. It has the disadvantage that the cervix is more likely to be torn than when it is dilated with tents. Unless there is a special reason for completing the operation at one visit, I think tents are preferable. Laceration of the cervix is less likely to happen when the uterus is, or has recently been, pregnant, owing to the softening of the tissue which accompanies that condition.

Rapid dilatation with Hegar's dilators.—Hegar's dilators are best made in one piece, for if the handle and body of the dilator are glued together, they are apt to come apart when

washed in warm water. The point of the dilator should be shaped like the small end of an egg (Fig. 112). The patient must be anæsthetised. Fix her in the lithotomy position with Clover's crutch. Have at hand a solution of corrosive sublimate in glycerine 1 in 2000. Anoint the finger with this. Have also at hand in a basin or jug two quarts of 1-2000 mercury biniodide solution in water. Douche the vagina with 1 in 2000 sublimate solution. Seize the cervix with a volsella having a broad grip and blunt-pointed teeth.

First ascertain the length and direction of the uterine canal with the sound. You can generally begin with No. 6 dilator. If this will not go in, you must try a smaller one. Anoint the dilator with the glycerine of sublimate solution over its whole length. Pull the uterus down so as to straighten the canal. Then pass in the dilator. If there is no resistance to its passage, remove it at once, and then, with similar precautions, pass in the next size, and so on. As soon as you reach a size which encounters resistance, so that you have to press hard to get it through the internal os, let it stay until the cervix has so relaxed that it fits loosely. This it usually will do in a minute or two, and then you can pass the next size. You will find that as you pass larger and larger sizes, the cervix takes a longer time to relax enough to let the next size pass. It has seemed to me as if the cervix relaxed a little more quickly if from time to time the dilator were withdrawn and reintroduced; the temporary removal of the dilating force perhaps permitting a change in the tissue favourable to relaxation to take place. In a case well suited for this method, such, for instance, as one of hæmorrhage with pregnancy, or retention of secundines, half an hour will be enough to dilate up to No. 17,* and a

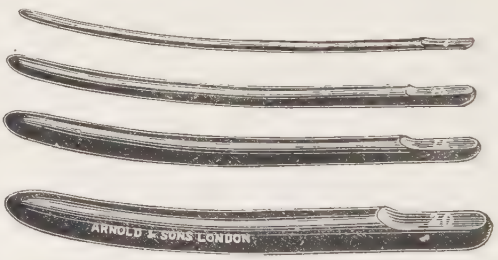


Fig. 112.—Hegar's dilators.

* The numbers indicate the diameter in millimetres.

canal which will admit this dilator will admit a finger of average size. But if the cervix be very rigid, you cannot even after an hour or more get dilatation up to or near this size without such force as to tear the cervix. In such a case desist, and, if exploration of the uterine cavity is necessary, insert a tent. But usually the presence of a foreign body within the uterus, such as a polypus or a bit of retained secundines, produces such relaxation of the os internum that it yields easily to dilatation. The os externum may be so small as to offer resistance to the passage of the dilators. This is best enlarged by dividing it up to the vaginal junction.

Dilatation by tents.—The laminaria or sea tangle tent expands slowly, but exerts enormous power. It takes about twelve hours to double its thickness. It can overcome a pressure of 500 pounds on the square inch, although under this pressure its expansion is very slight; but under a pressure of 120 pounds to the inch it expands to a degree which would produce distinct enlargement of the cervical canal.

The best *laminaria tent* is a piece of laminaria unworked, not planed off into a cylindrical shape (Fig. 113). Such a piece presents wrinkles and depressions on its surface, but as it expands these are filled up. Being about the same thickness all its length, and not being quickly affected by contact with fluids, it is easy, unless too thick a piece be chosen, to pass it through the os internum. Laminaria tents are the best for most purposes. One piece of laminaria, although it will not make the cervical canal admit the finger, yet will make it so large that it can be easily expanded farther with Hegar's dilators. But if these are not at hand, after one tent has done its work; two or more fresh ones can be put in side by side, and these will make the canal admit the finger. The great objection to the use of tents is the possibility of septic infection. This can be prevented by making a tent aseptic before putting it in, and not leaving it in too long. The most convenient course is to insert a tent in the evening, two or three the next day, and then explore the uterus under anæsthesia the third day. The completion of the dilatation under anæsthesia with Hegar's dilators is the speedier way, and therefore preferable.

Put the patient on her left side. Give a vaginal douche of 1-2000 biniodide solution. Pass a sound and measure the length of the cervico-uterine canal. Shorten the piece of laminaria until its length is the same. (Cut a shallow groove in it with a knife, and you can then easily break it.) Put the laminaria in a 1-2000 solution of sublimate in glycerine, so that it is covered by it, and let it lie there a minute. Seize the anterior lip of the cervix with a volsella, and pull it down as far as you gently can. Give the volsella to an assistant to hold. Dip the left forefinger in the glycerine, and pass it up to the cervix. Take the tent up with the speculum forceps held in the right hand, and then, guided by the left forefinger, pass it into the cervical canal. When it has entered as far as the part held by the forceps, remove the forceps and press the piece of laminaria up as far as it will go with the left forefinger. This done, put the finger in front of the cervix and press it back, so as to put the uterus in a position of anteversion. In this position the pressure of the posterior vaginal wall will prevent the tent from slipping out. If the uterus will not stop in this position, put a plug or plugs of cotton wool, tied round with a piece of string, and soaked in sublimate glycerine, in front of the cervix, so as to keep it pressed back. Some think that a glycerine plug makes the cervix dilate more readily. I advise it for the purpose of preventing the expulsion of the tent by keeping the uterus at right angles to the vagina. Leave with the patient a suppository containing half a grain of morphia to be put into the rectum if she should be in pain.

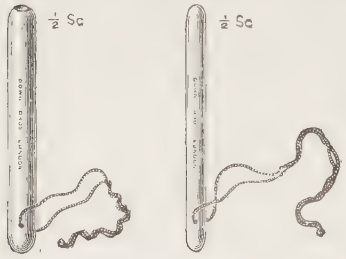


Fig. 113.—Laminaria tents.

The next day (not more than twenty-four hours after its insertion) remove the tent. Take out the plugs, if any have been used, by pulling on the string. Then douche the vagina with a 1-2000 sublimate solution. Anoint the left forefinger with sublimate glycerine, pass it up to the cervix, and feel the tent. Pass in a speculum forceps, grasp the tent, and withdraw it. Then wash out the vagina again with the sublimate solution.

The introduction and removal of tents can be done without anæsthesia; but an anæsthetic is necessary for the thorough exploration of the cavity of an enlarged uterus. In most cases such as we are supposing, a piece of laminaria, which is about the size of No. 10 bougie, will enter the cervical canal. If not, the canal can be quickly dilated by bougies until the laminaria will go in.

Exploration of the uterus.—The object of dilating the cervix is twofold: first, to find out the condition of the uterine interior; secondly, to treat it.

The anæsthetised patient must be held in the lithotomy position by Clover's crutch. Put one hand on the abdomen and press the uterus down. Dip the fore and middle fingers of the other hand into the solution of sublimate in glycerine, and pass them into the vagina, and one of them into the cervical canal. Most people can use the forefinger best, but the middle finger, being longer, will reach a little farther. Then combining the two hands, press the finger up and the uterus down. The hand on the abdomen should be pressed down into the pelvis *behind* the uterus. In this way the finger can explore the interior of the uterus, and the thickness of the anterior, posterior, and lateral walls can be appreciated between the internal finger and the external hand.

Pregnancy.—You may find the uterus *pregnant*, the cavity feeling as if containing a soft loose bag, which your finger pushes before it. As abortion is inevitable, empty the uterus. Pass the finger all round the uterine wall, so as to detach everywhere the chorionic villi. Then introduce a pair of suitable forceps, seize the detached structures, and extract them. If the uterus be as much as four months pregnant, with one finger you will not be able to reach far enough to detach all the placenta. In that case detach as much as you can, and pull away with forceps what you have detached. When you have thus diminished the uterine contents, the uterus will contract, and you will be able to get at a higher part of the uterus, and thus complete the separation. Do not conclude that the uterus is empty until your finger has explored every part of the interior. If it is empty, you will be able, by combined manipulation, to press down on the internal finger every part of the

fundus uteri. When you are sure the uterus is empty, wash out its interior with 1 in 2000 biniodide solution. Withdraw the douche nozzle from the uterus, antevert the uterus, and compress it between the two hands, so as to press out any of the solution that may remain in its interior, and also to make the uterus contract. Then douche the vagina with the biniodide solution. After withdrawing the douche nozzle, press out by pressure on the abdomen any fluid that may be retained in the vagina. Tell the patient to keep her bed for at least a week, and give her a mixture containing ergot, thirty minims of the liquid extract for a dose, three times a day.

Retained secundines.—When a woman aborts, and does not trouble a doctor about it, or possibly does not know it, often either the membranes rupture, the liquor amnii and fœtus are discharged, and then the cervix closes, the chorion or placenta being retained; or the chorion or placenta gets broken, and a bit of it is left behind. When this happens, hæmorrhage, not always continuous, but exceeding normal menstruation in frequency and amount, goes on so long as the retained fœtal product is in the uterus. If germs of disease or putrefaction have not reached the inside of the uterus, there are no symptoms beyond hæmorrhage and discharge. If germs have been introduced, as from unskilled meddling with dirty fingers or instruments, then the retained bits will decompose, and sapræmia, endometritis, septicæmia, or uterine phlebitis and pyæmia will be the result.

Fothergill* has studied the changes which take place in placenta retained *in utero*. The maternal blood in the intervillous spaces clots, the dead epithelium of the fœtal villi possibly acting as a foreign body and causing the clotting. Then the cells of the decidua serotina multiply and invade the clot; they destroy the epithelium of the fœtal villi, and organise the clot into fibrous tissue.

In some cases the retained bit is expelled spontaneously; but you cannot count upon this. It may be retained for months, and then the hæmorrhage greatly weakens the

* *British Medical Journal*, Jan. 29, 1898.

patient. The chance of the retained placenta being spontaneously expelled is greater if the whole of it be retained than if a small part only is retained. The retention of a part implies that this retained bit is more firmly attached than usual, for had it not been so, it would have followed the rest of the placenta when that was extruded or removed. Therefore, after retention of the entire chorion or placenta, spontaneous expulsion is the rule; after retention of a piece only, the exception. But the risk of hæmorrhage is great; it is impossible to know whether the retained piece of chorion will come away spontaneously or not; and the danger attending its removal, if done properly, is so slight that it is always better to remove a retained piece of chorion or placenta without delay.

"**Placental polypus**": "**fibrinous polypus.**"—When a little bit of chorion is retained, its size may be increased with clotted blood adherent between and around the villi. Thus a round lump, made of chorionic villi and blood clot, is produced, which feels like a polypus, and has been called a "*placental polypus.*" The uterine cavity may be filled with clotted blood, sometimes of different date, adherent where chorion was attached. This lump of clot may feel like a polypus, and has been called a "*fibrinous polypus.*" These names are harmless.

It makes no difference from the point of view of treatment whether the lump that keeps up bleeding after a miscarriage is placenta, or placental polypus, or fibrinous polypus. Detach with the finger the retained piece, then grasp it with forceps, and remove it. Then scrape away the decidua with a blunt curette. The bleeding comes from the endometrium, not from the bit of chorion. The decidua will come away even if you do not scrape it; but hæmorrhage will cease more quickly if you remove the decidua at the same time as the retained chorion, and you will guard against possible causes of continuance of hæmorrhage, viz.: (*a*) hypertrophy of decidua, which is more common in pregnancies that end in abortion than in those that go to term; (*b*) a bit of chorion may have been imperfectly detached by the finger and have escaped the grasp of the forceps. The curette will remove hypertrophied decidua and any attached bit of

chorion. After scraping, wash out the uterus with biniodide solution 1-2000, and press out fluid retained in it in the way already described.

Chorion Epithelioma.—I shall describe in subsequent chapters the new growths that cause bleeding. But there is one that needs mention here, viz. that formerly known as *deciduoma malignum;* so-called because those who first described it thought that it grew from the decidua. Then it was thought to be a sarcoma.

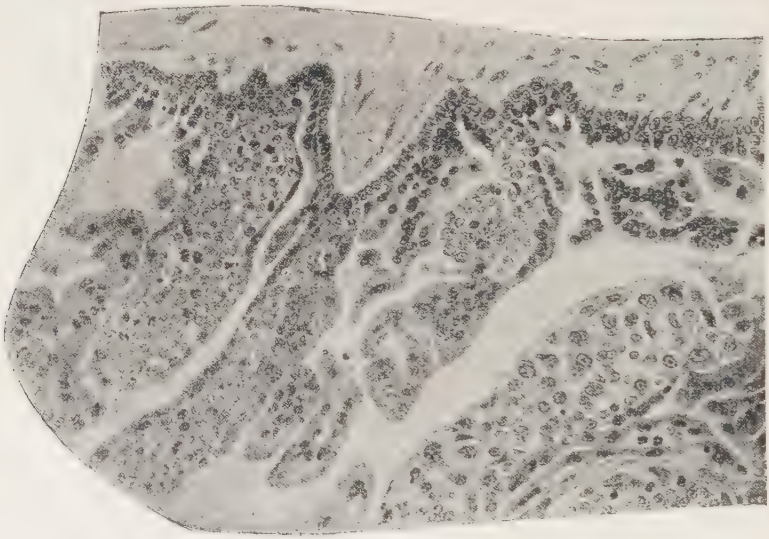


Fig. 114.—Small portions of a villus showing the origin of tumour from the epithelium; the continuity of the various cell formations with one or other layer is obvious. Karyo-kinetic figures are numerous in the Langhans' layer cell masses.

(*By permission of Dr. Teacher.*)

The name now accepted by almost all pathologists is "*chorion-epithelioma.*"* It is a malignant tumour of the uterus arising after delivery or abortion, which in the worst cases destroys life with a rapidity almost unequalled by any other kind of growth. Clinically it is characterised by the occurrence soon after the pregnancy of irregular hæmorrhages, progressive cachexia, sometimes fever and rigors. There is a

* Teacher, "Journal of Obstetrics and Gynæcology of the British Empire," 1903, vol. ii.

tumour within the cavity of the uterus which breaks down, infiltrates and destroys the uterine tissue. Metastatic growths rapidly occur, which are most common in the vaginal veins and the lungs. The new growth originates in the chorionic epithelium or its forerunner the trophoblast. Histologically it presents a characteristic, but complex picture, owing to the numerous modifications which the component cells undergo, so that they present an extraordinary variety of forms. The

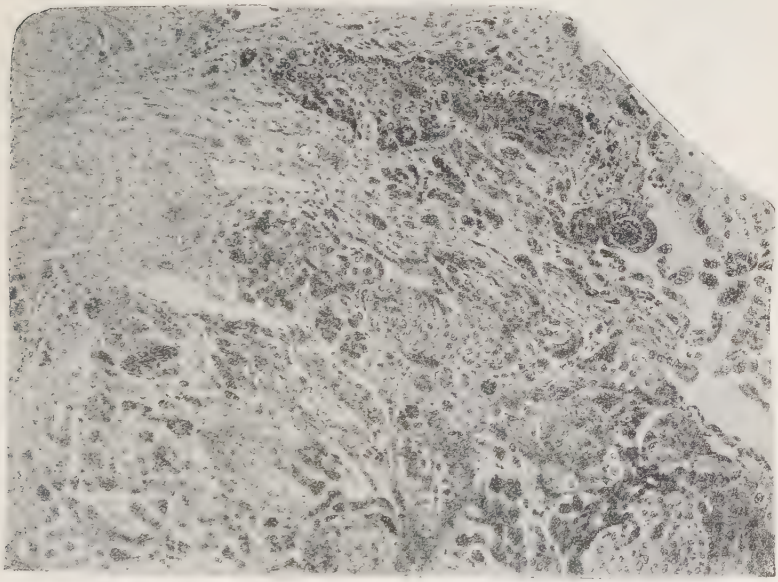


Fig. 115.—Typical masses of chorion-epithelioma invading the uterine muscle. The tumour tissue is distinguished by its darker shade. The remains of uterine muscle among the tumour produce a sort of alveolar structure. The dark masses with many nuclei are the syncytium. Here and there detached masses of it are seen, some of which simulate hypertrophied muscle fibres.

(*By permission of Dr. Teacher.*)

most typical elements are (1) small well-defined polyhedral cells, with large vesicular nuclei, closely packed together in masses without any connective tissue; these correspond to Langhans' layer. (2) Large multi-nucleated irregular masses of protoplasm in which no definite cell boundaries are recognisable. These correspond to the syncytium. (3) Large cells, sometimes mono-nucleated, sometimes multi-nucleated, some resembling decidual cells, some like the multi-nucleated giant

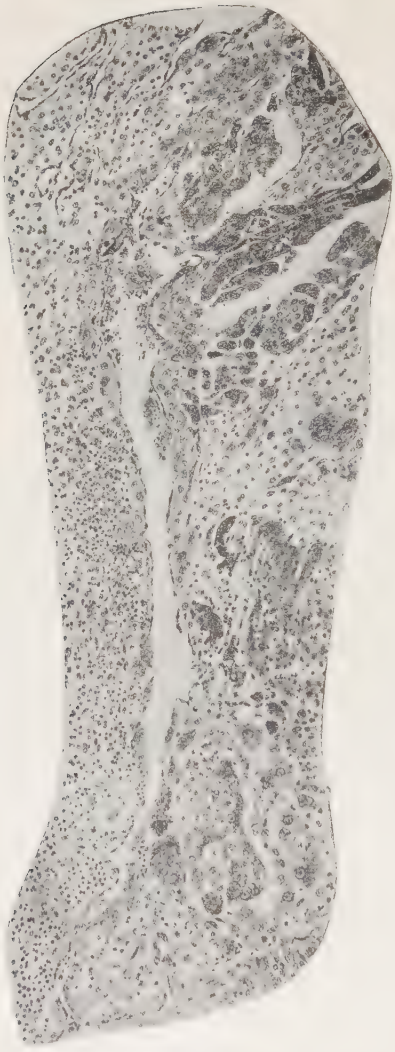


Fig. 116.—A uterine blood-vessel invaded by tumour. The attacking cells have appeared under the endothelium at two points, and large wandering cells of intermediate character have also crept round to the other side of the vessel. The uterine tissues show re-active round-celled infiltration. In the vessel, at a point where the endothelium has already broken down, there is a small thrombus. There is also a clump of tumour cells.

(*By permission of Dr. Teacher.*)

cells which occur in the decidua serotina. These are at parts arranged in cell masses without intervening stroma, at other parts infiltrating and destroying tissue stroma. Between the cell masses are seen the remains of the normal tissues, and much blood, sometimes clotted, sometimes fluid. The tumour has no connective tissue stroma or blood-vessels of its own. Its characteristic feature is the way it attacks and burrows into the normal tissue, especially the blood-vessels. Hence the hæmorrhage and the mode of dissemination.

Tumours containing precisely similar structures occur in other parts of the body than the uterus, and in either sex. The explanation is that they are teratomata, and originate from some structure which has the morphological value of a fertilised ovum; and the chorion-epitheliomatous tissue represents the trophoblast of that ovum.

Although the histology is characteristic, yet it is not possible with the microscope to draw a

sharp distinction between the villi of a simple hydatidiform mole and chorion-epithelioma: nor can the precise amount of epithelial overgrowth which constitutes malignancy be defined. Greater weight should be given to the clinical signs than to the microscopic evidence.

Chorion-epithelioma is especially apt to follow pregnancy with a hydatidiform mole. Persistent hæmorrhage is then the indication for exploring the uterus.

The possible presence of this rare disease should lead to the practical rule carefully to examine all substances removed from the uterus, and, if in doubt, to do so with the microscope. If chorion-epithelioma be present, the only chance of saving the patient's life is in hysterectomy without delay.

CHAPTER XXV.

ADENOMA OF THE UTERINE BODY.

Endometritis (?)—Matthews Duncan in the beginning of his lecture on endometritis says: "Who can tell what anyone means by endometritis? Often its use is the parent or the child of ignorance and confusion: often it is a cloak of ignorance and confusion."

These statements are true for the following reasons. The endometrium cannot be seen or felt without trouble either to patient or doctor. Hence its condition is generally guessed at. It undergoes a monthly cycle of change; and we imperfectly know what these changes are. Without perfect knowledge we cannot say whether slight changes in the endometrium are pathological or physiological. Our knowledge being thus imperfect, and it being in most cases mere conjecture that there are changes in the endometrium at all, there is, as Duncan said, ignorance. Many think endometritis a common disease, because they call any case by this name in which the patient has whites and increased menstrual flow. Therefore there is confusion.

If we are ignorant, the first condition of learning is to be aware of our ignorance. To label with a name cases we know nothing about tends to perpetuate ignorance.

So-called fungous endometritis.—There are three conditions known as "endometritis," which are different from one another. These conditions are: (1) adenomatous growth, (2) catarrh, (3) what is called "atrophic endometritis."

The disease I have here to describe is adenomatous growth, which is often spoken of as "*endometritis*." But the reasons for thinking there is inflammation are not conclusive. Inflammation has been defined as the response of living tissue to injury. One of its features is that when the cause of inflammation has been removed, an inflamed part is restored to its normal condition, as far as the damage done will permit. When mucous membranes are inflamed they secrete pus; and when microscopically examined, the changes which accom-

pany inflammation are seen. Genuine endometritis gets well when its cause is removed, and even if it secretes pus, does not cause great hæmorrhage. What is called *fungous*, or *fungoid*, or *villous endometritis*, presents neither of these characters. It is an adenomatous or myxomatous growth, and often both kinds of growth exist together. I therefore speak of it as *adenoma* of the body of the uterus. We cannot distinguish, until after removal, adenomatous growths from myxomatous, and if we could it would make no practical difference.

Morbid anatomy.—There are two forms of adenoma of the body of the uterus: the *polypoid*, and the *hyperplastic* or diffuse.

The polypoid form is sometimes spoken of as "endometritis polyposa," "metritis interna villosa," "mucous polypus of the body of the uterus," "fungoid degeneration of the endometrium," or "uterine fungosities." It may be proper to apply also the term endometritis to these cases because the presence of these growths does excite a little inflammation of the endometrium; but the main morbid change is not inflammation, but new growth. In this disease there are outgrowths from the mucous membrane of the body of the uterus. They are from the size of a pea up to an inch in length. There may be only one, or the uterine cavity may be filled with them.* When examined microscopically, they are found to consist of gland tissue, healthy excepting as to quantity; vessels; and connective tissue between, this tissue being looser in some places than others, and in some quite myxomatous. Some consist mainly of gland tissue; in others the connective tissue preponderates. They thus resemble, as to their structure, the common mucous polypus of the cervix; but while such growths are common in the cervix, they are rare in the body of the uterus.

Malignant adenoma.—When these outgrowths are large, they are often malignant, grow fast, and return after removal. Small outgrowths are seldom malignant. If the growth be larger than a hazel nut, malignancy should be suspected; the growth should be examined microscopically, and if the microscope shows only adenomatous structure the patient should nevertheless be watched, and the interior of the uterus again

* *See* Goodell, "Lessons in Gynecology."

examined if symptoms return. There is no way of distinguishing a malignant from a benign adenoma, except by watching the case and observing the rapidity of growth and its return after removal.

The diffuse form.—In the *hyperplastic* or diffuse form there are no localised outgrowths, but the whole lining membrane of the uterus is thickened, softened, and easily detached. The finger can detach the mucous membrane in large pieces. When examined, the structure is like that of the polypoid form; overgrowth of healthy gland tissue and vascular connective tissue between.

Etiology.—We know nothing of the etiology of either the polypoid or the diffuse form. Among the causes that have been assigned are subinvolution, retroversion and retroflexion of the uterus, and lacerations of the cervix. But these conditions are very common, and uterine adenoma is comparatively rare; and we know nothing as to why adenoma should occur in one case of subinvolution or retroversion of the uterus, and not in others. But to think that when the uterus is not quite in a normal condition new growths should be apt to occur, is in accordance with the little general knowledge we have about the circumstances of origin of new growths. The association with laceration of the cervix is a theory unsupported by the slightest evidence. Habitually imperfect sexual intercourse, there is reason to think, may be a cause.* The disease has been ascribed to "ovarian influence"; but as we have no means of detecting or controlling this "ovarian influence," the theory, if true, does not help us. With fibroids a similar condition of the mucous membrane may coexist; and this is a reason why we should dilate the cervix, and explore the uterus, before urging that the patient's abdomen be opened.

Physical signs.—In both forms there is some expansion of the uterine cavity, and therefore enlargement of the whole uterus; but the cavity seldom measures more than three inches and a half long. The uterus is movable. There is, as a rule, no disease of the uterine appendages, or of the cervix, although such morbid changes may be accidentally associated with it.

* *See* Pinkuss, "Zeit. für Geb. und Gyn.," Band xxxiii.

Symptoms.—The symptoms are hæmorrhage and discharge. I know not that the hæmorrhage has caused death; but it often produces serious anæmia. It bears no relation to the number or size of the fungosities. The hæmorrhage may keep nearly to the monthly period, being then prolonged and excessive; it may come on irregularly; or it may be almost continuous. No inference can be drawn from its time of occurrence. Between the hæmorrhage there is generally discharge, not purulent, but watery and pink. There may be a little pain; but these patients come, not for pain, but for hæmorrhage. The disease generally occurs in women absolutely or relatively sterile. It is said to produce sterility, but I know of no evidence of this. Besides these local troubles, there will be such remote symptoms as anæmia produces.

Diagnosis.—This cannot be made without exploring the uterus. When the finger is in the uterine cavity you feel in the *hyperplastic* form the thick, soft, mucous membrane, perhaps coming away in large pieces merely from the movement of the finger. This might be taken for an early pregnancy. If this be the nature of the case, in examining the membranes removed, we shall see the amnion, identified by its thinness and transparency. Nothing like this is present with an adenomatous growth. A uterus lined with the decidua of an extra-uterine pregnancy presents a close resemblance to one containing a diffuse adenoma; for in both there is overgrowth of the endometrium, and the thickened endometrium is easily detached. Therefore in any such case examine carefully not only the uterus, but the ovaries and tubes. In the *polypoid* form you feel the polypoid growths in the uterine cavity. They will be distinguished from fibroids by their greater softness, and their being more easily detached; and after detachment by cutting them open, when it will be seen that they are not made of white fibrous tissue.

It is not possible before removal and examination to distinguish an adenomatous polypoid growth, independently of pregnancy, from a small placental or fibrinous polypus, or the malignant disease following pregnancy which has been described under the name of "chorion-epithelioma." If there be a history of abortion, the nature of the growth may perhaps

be suspected. It is not important to make the diagnosis between the two former conditions, because the treatment is the same. If it be the remnant of a miscarriage, the prognosis is more favourable than if of any other nature.

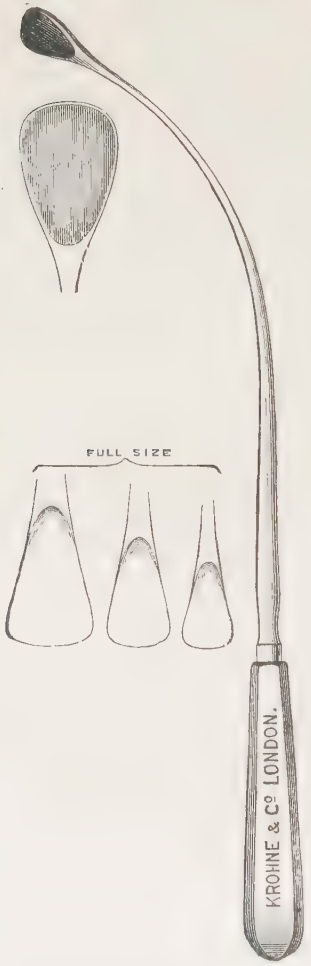


Fig. 117.—Curette recommended by the author.

The diagnosis between a *simple* and a *malignant* adenoma cannot be made with certainty. The more numerous and the larger the polypoid masses, and the more rapid the growth, the more likely is the disease to be malignant; while a single small polyp is probably innocent. But cases have been recorded in which large and multiple growths proved innocent; and a malignant growth is at first small. Therefore all that can be said is that, the larger the growth, the more careful should the prognosis be.

Treatment.—The treatment is the removal of the diseased endometrium. This is accomplished by scraping away as much as possible with the curette, and destroying the rest with caustic. The best *curette* is one which has a broad blunt end, and is rigid (Fig. 117). A sharp curette like Marion Sims's may cut into the uterine tissue and cause troublesome hæmorrhage. A flexible curette bends, so that the operator is unable to tell what he is doing with it.

Douche the vagina with 1-2000 sublimate solution. Let the volsella and the curette lie in the sublimate solution while this is being done. Seize the cervix with the volsella, and draw it down. Then with the curette scrape the anterior and

posterior uterine walls, so as to detach as thoroughly as possible the lining membrane. This is often enough. It is probable that greater security against recurrence is obtained by destroying the superficial part of the lining membrane with caustic. The best caustic is iodized phenol. The cervix is held by the volsella on the anterior lip. Then take a piece of cotton wool in the grasp of a pair of speculum forceps and roll it round the blades, so that it forms a mop about the thickness of the little finger, and the wool projects about one-third of an inch beyond the tip of the metal. Dip it in the drug, and pass it through the cervical canal up to the fundus, and there press it against the uterine wall on all sides, so as to squeeze out the fluid. Then withdraw it. Remove the volsella, and then syringe the vagina with the sublimate solution. A good way of holding the wool is to wrap it round a slender piece of firewood having notches cut in it about an inch from the end. The wool can be tied on with string, tightly tied round it opposite the notches. It must be well tied, or there will be danger of its remaining in the uterine cavity.

This treatment does not invariably cure, but it does so in most cases. Cases in which there is one single outgrowth are the most favourable. Those in which the growths are numerous and large are the most liable to relapse. Should relapse occur, the treatment must be repeated, or the uterus removed. These patients have often reached an age at which the preservation of the uterus is not of moment. If in a case with distinct polypoid outgrowths, speedy relapse and rapid growth of the neoplasm indicate malignancy, the uterus should be removed without delay.

CHAPTER XXVI.

CANCER OF THE CERVIX.

Hæmorrhage may be the first symptom of malignant disease of the uterus. The common malignant disease is cancer. There are rare forms; namely, cauliflower excrescence, corroding ulcer, and malignant adenoma. I shall describe first the pathology, diagnosis, and treatment of the common cancer; viz. cancer of the cervix.

The etiology of cancer.—*Age.* Cancer of the uterus is most common between thirty-five and fifty, but may occur at any age. It has been met with in children, but is rare before twenty. *Heredity.* Every constitutional peculiarity is inherited; among others, a tendency to cancer. But such a tendency in one parent may be neutralised by another peculiarity derived from the other. Hence in a few cases only of cancer can an inherited predisposition be traced. We know no physical peculiarities which enable us to pick out a person liable to cancer. *Child-bearing.* Cancer is especially apt to occur where there has been persistent local irritation; that is, where nutrition has been impaired. During labour, the cervix uteri is apt to be damaged, bruised, torn, and afterwards often inflamed. The oftener such damage occurs—that is, the more children a patient has—the more liable becomes the cervix uteri to be the seat of cancer. But we know not any special injury which makes the patient more liable to cancer. Lacerations of the cervix have been said to do this. The only person who has tested this by facts is Sir John Williams, and he finds that cancer is not commoner with deep lacerations than with slight ones, and very rarely develops in the angles of cervical rents. *Other genital functions.* We know no peculiarity of menstruation that predisposes to cancer; nor know we that sexual relations have anything to do with it.

Old classifications of cancer. — Cancer was formerly classified, according to its hardness or softness, and its position, into scirrhus, encephaloid, and epithelioma; but this classification is obsolete. Cancer of the uterus has been classified according to its physical characters: a flat ulcer has been called "cancroid"; a sprouting outgrowth has been compared to different vegetables, *e.g.* a cauliflower, a mush-

Fig. 118.—Malignant adenoma highly magnified. (*After Gebhard.*) Note the columnar gland cells lying back to back, only separated by small remains of stroma.

room, and called a papillary tumour; and distinguished from cases in which nodular enlargement of the cervix is present. It matters nothing what vegetable a cancer happens to resemble. One of the above similes has been so ignorantly used as to introduce confusion. There is a very rare form of disease which was first described as "cauliflower excrescence," and therefore has a right to this title. This disease has its own peculiar characters. Ordinary cancer that happens to

feel like a cauliflower is not "cauliflower excrescence," and ought not to be so called.

Histology of uterine cancer.—I can only briefly summarise this. Three forms of malignant disease occur in the uterus.

1. **Malignant adenoma** (Fig. 118).—This is a growth of gland tissue which differs from healthy gland tissue and from simple or benign adenoma only in its quantity and the diminution of the inter-glandular tissue. The difference is in

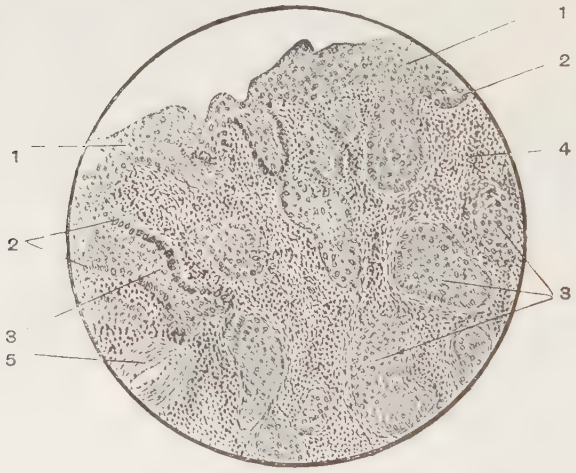


Fig. 119.—Pavement epithelioma of vaginal portion.

1. Surface epithelium with epithelial plugs sinking down into the deeper tissue. 2. Border epithelium as yet regularly arranged and deeply staining. 3. Cancer plug and nests. 4. Interstitial tissue infiltrated with small cells. 5. Vessel.

(*By permission, from Orthmann's "Vade Mecum für histopathologische Untersuchungen in der Gynäkologie."*)

degree, not in kind. If adenomatous growth is abundant and recurs after removal, it may be considered malignant, and the uterus should be removed. This form of malignant growth is rare, and is only met with in the body of the uterus.

2. **Squamous-celled carcinoma or epithelioma.**—This begins with proliferation of squamous epithelium, which, as it grows, sinks down like a plug into the subjacent tissue. These plugs, if cut lengthways, look like finger-like processes; if cut across, they look like nests or pearls of epithelium. The cancer cells are short-lived: the superficial first formed

cells soon die, and break down, an ulcer being thus formed. This kind of cancer is most frequent on the vaginal portion, less so in the cervical canal, least common in the body of the uterus.

3. **Columnar-celled carcinoma.**—This begins with overgrowth of the cylinder epithelium of the glands of the body of the uterus, of the cervix, or of the gland tissue of an erosion. Not only is there overgrowth, but the cells do not always divide parallel to the cell basis, but divide sometimes at right angles to it, so that the newly formed cells do not lie side by side as in normal columnar epithelium, but lie on the top of

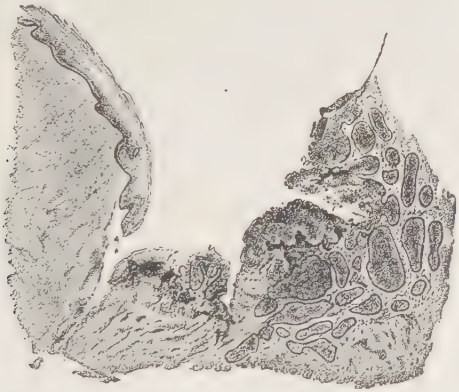


Fig. 120.—Carcinoma of vaginal portion. (*After Gebhard.*)

Note on left of figure healthy epithelium; on right plugs of epithelial growth sinking down into tissue of vaginal portion, and epithelium broken down.

one another, the epithelium thus coming to be many-layered. The cells also become shorter, flatter, more nearly cubical, and at length polymorphic. Plugs of this structure grow down into the tissue beneath it, and as they do so the more superficial early formed growth dies and breaks down. This is the kind of cancer most often present in the body of the uterus: it also occurs in the cervix: it is rare on the vaginal portion. When the glandular structure is long preserved, this form is often spoken of as *adeno-carcinoma*. Finally some rare cases of mixed growths have been described: chondro-carcinoma, sarco-carcinoma, myo-carcinoma. Most of these are examples of cancer invading already existing tumours.

Clinical classification of cancer.—There are three forms of uterine cancer: (1) Cancer of the vaginal portion; (2) cancer of the cervix; (3) cancer of the body. This is a useful classification, because cancer beginning in these different places differs in prognosis and treatment.

Cancer of the vaginal portion.—This means cancer beginning in the mucous membrane which lies between the os externum and the junction of the vagina with the

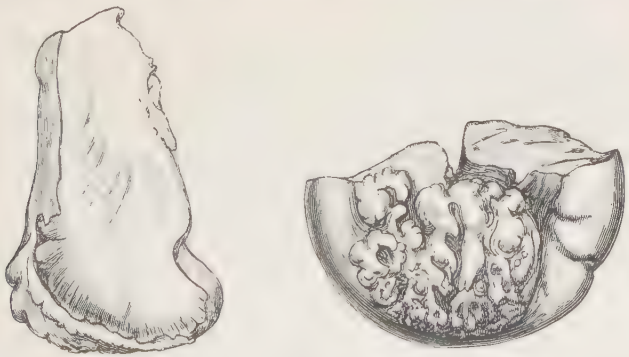
Fig. 121.—Adeno-carcinoma of the cervix. (*After Gebhard.*)

cervix uteri. This mucous surface is covered with pavement epithelium. The cancer spreads along the surface over the vaginal portion and along the vagina, looking like a flat granular patch (Figs. 122, 123, 124); or, beginning like a wart, grows down into the vagina like a polypus; or it may spread up the cervical canal. It does not tend to spread into the cellular tissue until it has widely attacked the vaginal portion. As cancer beginning in this place is seated in a part that can be felt and seen, it can

be found out as soon as the patient asks advice. If it is recognised early, we can remove the whole disease, and cure the patient.

Fig. 122.—Cancer of vaginal portion. (*Drawn by Burgess, from a patient of the author's.*)

The true cauliflower excrescence.—The very rare disease known as "*cauliflower excrescence*" is a form of cancer of the vaginal portion. It grows down into the vagina, forming a very soft growth hanging in fringes, some-



Figs. 123 and 124.—Cancer of vaginal portion, from below and on section. (*By permission of Sir J. Williams.*)

thing like myxomatous disease of the chorion, and having a narrow stalk. It was first described, and the name given to it, by Dr. John Clarke, and was afterwards more fully described by Sir C. M. Clarke.* He says: "There is a striking resemblance between itself and a portion of the upper

* "Diseases of Females," Part II.

surface of a cauliflower or head of brocoli. The surface is granulated, and it consists of a great number of small projections, which may be picked off from the surface, as the granules may be detached from the vegetable. The firmness of the tumour agrees also with that of the plant. . . . The colour of the tumour is . . . what may be called a bright flesh colour. If injured it bleeds, and often bleeds spontaneously. The tumour is not tender. Its attachment is to the os" (Sir C. Clarke meant the margin of the os) "and to that alone; it never can be traced into the cavity of the uterus. A small part of the os uteri may give rise to the disease, or the whole circumference of the opening may be occupied by it." No one, says Sir C. M. Clarke, has seen a tumour resembling a cauliflower excrescence in the dead body, nor does any specimen exist in museums. The reason is that after death, or after removal, the tumour loses its firmness, and becomes a flocculent pulpy mass, like a macerated placenta. Attempts to inject such tumours have failed, the vessels being so fragile. Our knowledge of its histology consists of one case, examined by Sir John Williams, from a

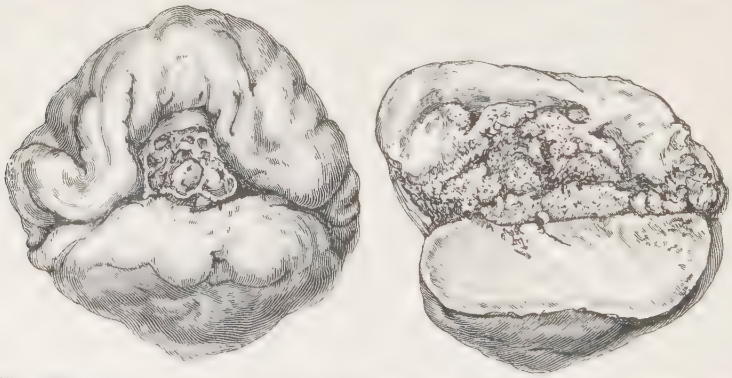


Fig. 125.—Cancer of the cervix, from below and on section.* (*By permission of Sir J. Williams.*)

specimen given to him by Dr. Godson. He reports that it is a squamous epithelioma.

Cancer of the cervix. This form of cancer begins in the glands of the cervical canal. It may begin at any part

* This patient remained free from recurrence at least eleven years after amputation of the cervix.

of the canal, but is more common at the lower part (Fig. 125). It may co-exist with adenoma, there being an erosion at the lower part of the canal, and cancer at the upper part; or the cancer may begin in a mucous polypus. As it grows, its form varies in different cases. It may form a nodule in the cervix, or a warty growth into the canal, or a mass bulging at the os externum. Cancer may be present at the upper part of the cervical canal without any sign of disease at the external os. Cancer may be present both in the cervical canal and on the vaginal portion.

This form of cancer tends to grow outwards, towards the cellular tissue, which is soon invaded. The cellular tissue first invaded is that in the utero-sacral ligaments. Hence, unless the disease is found out early, radical treatment is impossible. This form of cancer grows in a place which, when the patient is examined in the usual way, may not be accessible to touch or sight, and hence it seldom is recognised early enough for radical treatment. This is the most unfavourable kind of uterine cancer.

The spread of cancer.—As it grows, cancer (*a*) invades adjoining parts; (*b*) infects lymphatic glands; (*c*) produces metastatic growths in distant parts. These effects cause the final changes to be much the same, in whatever way the cancer began.

(*a*) The cancer invades vagina, bladder, rectum, ureters peritoneum, and ovaries. The vagina is attacked in four-fifths of all cases; the bladder in two-fifths.

(*b*) The lymphatic vessels * from the vulva and lower third of the vagina run to the *inguinal* glands. One from the body of the uterus follows the round ligament to an inguinal gland. Hence the inguinal glands are involved in cancer of the vulva or lower third of the vagina, and occasionally in cancer of the body. The lymphatics of the middle third of the vagina run separately, and those of the cervix uteri and upper third of the vagina run together, accompanying the blood vessels, to the *iliac* glands. These glands are two or three in number, situated just below the pelvic inlet, nearly in front of the sacro-iliac synchondrosis, at the bifurcation of the common iliac arteries. The upper

* *See* Winter, "Zeit. f. Geb. und Gyn.," Bd. xxvii.

of these glands is the larger; the lower and smaller is that which receives the lymphatics from the middle third of the vagina. No uterine lymphatics run to the obturator glands. The lymphatics of the uterine body and fundus run along the upper border of the broad ligament, between the ovary and tube, and accompany the ovarian artery to the *lumbar* glands, situated in front of the spine, on a level with

Fig. 126.—Cancer that has destroyed the cervix and is invading the body of the uterus. (*From a specimen in the museum, St. Bartho'omew's Hospital.*) (*Robert Barnes.*)

the lower end of the kidney. In uterine cancer the glands are attacked very late. Adjacent parts are invaded long before the glands become involved. So long as the uterus is movable, it is rare for the glands to be diseased. After adjoining parts have been invaded, disease of the glands only occurs in about one-third of the cases. When the disease recurs after removal, it is rare for the recurrence to be in the glands.

(*c*) Secondary or metastatic growths are rarer, and occur later, in cancer of the uterus than in any other form of cancer. They occur in less than 10 per cent. They are mostly in the liver, next often in the lungs, after which in

frequency come the kidneys. Secondary growths have been seen in the stomach, bowel, thyroid, brain, supra-renals, skin, gall-bladder, heart, breast, muscles, and bones; but all these are rare. Cancer of the uterus secondary to cancer elsewhere is very rare.

The breaking down of cancer.—Cancer sooner or later

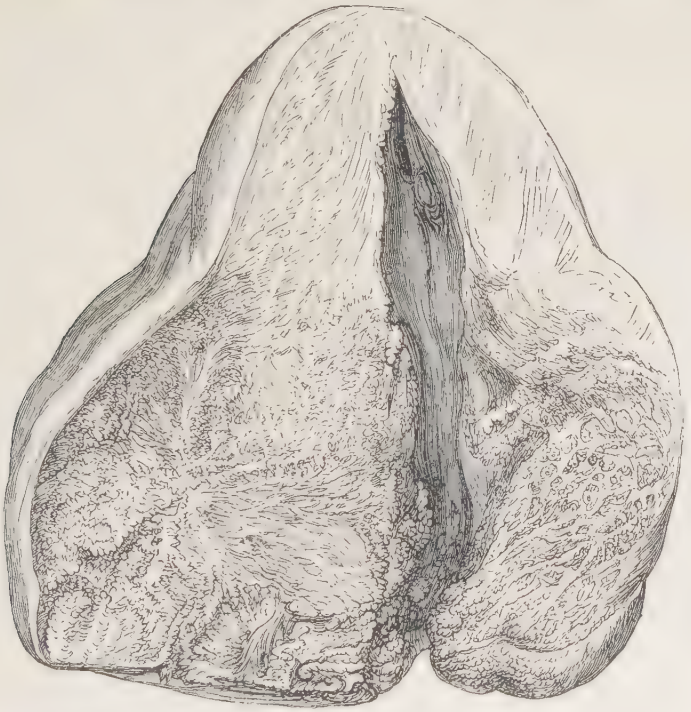


Fig. 127.—Showing great enlargement from cancer of the cervix and lower part of the body of the uterus. (*From a specimen in the museum., St. Bartholomew's Hospital.*) (*Robert Barnes.*)

breaks down; that is, the older part of the growth dies and disintegrates. Big sloughs are rare, but have been seen. This breaking down is important, for it is a characteristic feature of cancer, and it does injury, making holes where there ought to be continuity. The time at which it occurs varies. Sometimes it occurs so early that the cancer is an ulcer almost from the beginning (Fig. 126); sometimes so late that the cancer may form a mass of such size and hardness (Fig. 127)

as to block the cervical canal, and prevent the contents of the uterine body from getting out, thus producing hæmatometra or pyometra.

The symptoms of cancer.—The chief symptoms, when cancer is advanced, are bleeding, offensive discharge, pain, and wasting. These symptoms come on so insidiously that often the patient does not seek advice until the cancer is so advanced that it cannot be removed.

Hæmorrhage is generally the earliest symptom. Menstruation is excessive, and there is bleeding also at times when there should be none. When cancer is advanced, the bleeding is often so great as to make the patient very anæmic. In cancer of the vaginal portion, owing to the growth being liable to contact, bleeding after sexual intercourse is sometimes an early symptom. Early in the disease there is no feature of the hæmorrhage from which its cause can be inferred; local examination alone can reveal this. *Therefore any unusual hæmorrhage in a woman who has had children should be a reason for local examination.*

Discharge is always present in the intervals between hæmorrhages. In the beginning it is described as "whites." Later it may be watery, purulent, or sanious, and stinking. It begins to stink when the cancer has begun to break down, so that the discharge contains fragments of decomposing tissue. Often it is irritating, so that it causes itching or soreness, or even inflammation, of the mucous membrane and skin of the vulva. These characters are valueless in diagnosis. Early in cancer, when diagnosis is very important, the discharge does not stink, and is only what the patient calls "whites." Any discharge may stink if the patient does not keep herself clean, and there are many causes, other than cancer, which even in cleanly patients may provoke stinking discharge. But discharge may be the first symptom. Therefore *any unusual discharge in a woman who has had children should be a reason for local examination.*

Pain.—Pain is an early symptom in about half the cases. Sometimes it comes late; sometimes it is absent. It is usually felt in the lower belly, sacral region, groins, and down the thighs. It is more felt on the left side than on

the right; when limited to one side, it is the left side six times as often as the right.* The disease affects not the left side more than the right; the preponderance of pain on the left side is because the nervous system on that side is more sensitive. The pain is usually worse at night, and therefore often keeps the patient awake. This is partly because the upright position leads to some passive congestion in the pelvis, and partly because at night the patient is tired, and her nervous system weaker. The pain is worse before menstruation, because at that time the pelvic organs are congested. Pain and bleeding are often in inverse proportion to one another, because bleeding relieves congestion, and congestion causes pain. Later in the disease, when it has spread beyond the uterus, special kinds of pain may arise, dependent on the direction of spread. There is nothing about the pain distinctive of cancer.

Wasting.—This, if we look at the whole course of the case, is invariable. The time at which it begins, or rather is noticed by the patient, is variable, and its rate is variable.

Incidents of the spread of cancer.—As the cancer grows, it extends (early or late, according to its seat) into the *cellular tissue* and the *peritoneum*. Hence the uterus becomes fixed, and attacks of local peritonitis occur. The peritoneum is involved by direct extension: secondary growths of cancer on it are rare. Acute general peritonitis is not common, but it has been set up by the breaking down of the cancer and the escape of discharge into the peritoneal cavity.† This is one of the ways in which cancer may lead to death.

When the cancer grows forwards it extends into the *bladder*, and sets up cystitis, with painful and frequent micturition as its symptoms. In time it breaks down, and in about one-sixth of the cases a vesico-vaginal fistula is formed before death occurs (Fig. 128). In many the disease invades the ureters, compresses them, and leads to pyelitis and death by uræmia. More rarely secondary growths occur in the kidneys. Sometimes the disease spreads down the anterior *vaginal wall*, surrounds the urethra, and blocks it up, causing retention of urine. Extreme suffering results, not only from

* *See* Champneys, "Obst. Trans.," vol. xxii.

† *See* Gusserow, "Deutsche Chirurgie."

the bladder distension, but because the passage of a catheter in such cases causes intolerable pain, so that I have known patients with growth in this place welcome the making of a vesico-vaginal fistula.

Cancer often grows backwards, invading the *rectum*, and also setting up cellulitis round it. Hence the rectum becomes

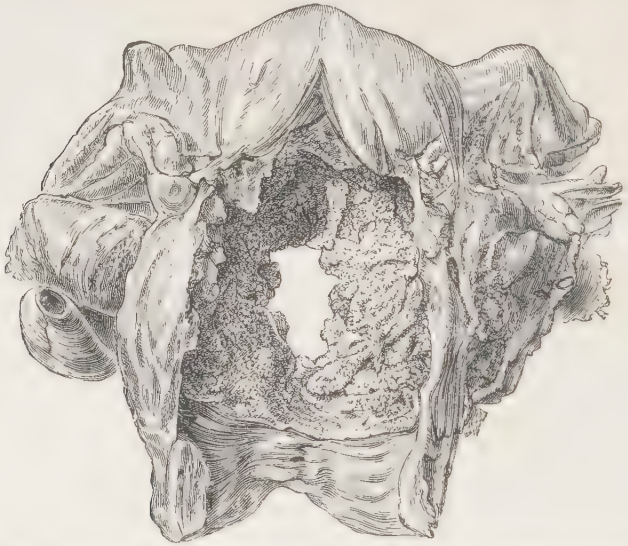


Fig. 128.—Cancer that has perforated the bladder. (*From a specimen in the museum, St. Thomas's Hospital.*) (*Robert Barnes.*)

surrounded by hard tissue and fixed. There are constipation, painful defæcation, ulceration of the rectum, bleeding from the bowel, hæmorrhoids, even obstruction of the bowels. R. Barnes* suggests that nausea, loss of appetite, &c., may be partly explained by the re-absorption of stercoraceous matter, and has invented the name "copræmia" to describe the condition. The extension and breaking down of ulceration of the rectum may produce recto-vaginal fistula.

In its growth cancer may involve *veins*. A not infrequent terminal complication of uterine cancer is compression and thrombosis of an iliac vein, leading to œdema of the corresponding limb. The compressing agent may be a cancerous gland. The uterine veins may become inflamed, pus

* "Diseases of Women."

from them may get into the blood current, and fatal pyæmia may result.

Cancer may spread so that it attacks *nerves* going to the lower limb. Then pain extending down the limb and muscular spasms may be the result.

The bleeding which cancer causes makes the patient *anæmic*. Hence she becomes liable to neuralgic pains in distant parts, especially the breasts. Appetite becomes poor; there may be discomfort, pain, nausea, or vomiting after food, from weakened digestive power. There is palpitation and shortness of breath. Fatty degeneration of the heart may take place and lead to sudden death. The drain of albuminous fluid by the bleeding and discharge may bring about *lardaceous disease* of liver and kidneys.

Changes in the uterine body with cancer of the cervix.—R. Barnes* has pointed out that with cancer of the cervix the body of the uterus is almost always enlarged from increased blood supply if not from cancerous growth. Cancer of the cervix may set up endometritis of the body, in which case the endometrium will be reddened and its secretion purulent or dark (from admixture of blood) and perhaps offensive from decomposition. If the cancer be late in breaking down, blood or pus may for a time be pent up in the uterine cavity, and distend it; the conditions known as hæmatometra or pyometra. According to Abel and Landau† there is with cancer of the cervix almost always morbid change in the body; either endometritis, commencing cancer, or else a structure like sarcoma, which they think is a preliminary stage of cancer. It is doubtful, however, whether they have correctly interpreted their observations, for their view can hardly be reconciled with the fact that among museum specimens of advanced cancer of the cervix it is exceptional to find that the cancer has also attacked the body.

Modes of death from uterine cancer.—It is difficult to arrange in order of frequency the ways in which uterine cancer brings about death, because in many cases several causes contribute to the fatal effect. The patient may die from hæmorrhage. Cancer usually kills by gradual wasting

* "Diseases of Women," 1st edition, p. 818.

† "Arch. für Gyn.," Bd. xxxv.

and exhaustion, death being hastened at the end by one or more complications. The complications which either hasten or cause death are the following: peritonitis, local or general, by direct extension or by perforation; dysentery-like ulceration and inflammation of the bowel; acute cystitis, pyelitis and uræmia; pulmonary embolism from detachment of a clot in venous thrombosis; pyæmia from phlebitis; bed-sores; pneumonia and pleurisy from secondary growths in the lung; sudden failure of heart from fatty degeneration. Putrid emboli may lead to gangrene of lung. Embolism of the middle cerebral artery, causing hemiplegia, has been observed (R. Barnes), but it is difficult to see how this can be a result of uterine cancer.

Duration of uterine cancer.—The average duration of life in uterine cancer is about eighteen months. It may kill in four months, or extend over as many years. Individual cases depart so widely from the average that prognosis cannot wisely be based on it. Judge of the rate of growth by comparing the duration of symptoms with the extent of local change, and in predicting the future, assume that the rate of growth will be quick or slow according to what it in each case has been in the past.

The importance of early diagnosis of cancer.—You will have seen, from what I have already said, that the one thing of supreme importance for the treatment of cancer is early diagnosis. Therefore I ask careful attention to the physical signs of early cancer. Early diagnosis is important for this reason: secondary growths, either in lymphatic glands or in other parts of the body, occur later and more seldom with cancer of the uterus than with cancer of any other part. There is, therefore, a better prospect, if cancer of the uterus be removed, of freedom from recurrence than in any other form of cancer. Further, modern improvements in operative *technique* have made it possible to remove cancer of any part of the uterus, *so long as it is limited to this organ*, with little risk. The obstacle to success in the treatment of cancer is that in most cases the disease is not diagnosed, either because the patient does not seek advice or is not examined—perhaps does not permit examination—until the disease has extended beyond the uterus. The diagnosis is difficult.

Different clinical forms of cancer.—I have pointed out that there are three seats of cancer, viz.:—

1. Cancer of the vaginal portion; that is, cancer beginning between the external os and the junction of the uterus and vagina.

2. Cancer of the cervix; that is, cancer beginning between the os externum and the os internum.

3. Cancer of the body; that is, cancer beginning above the os internum.

The clinical differences between these three kinds of cancer are these:—

Cancer of the vaginal portion begins in a part that can be felt and seen. It can be diagnosed earlier than any other form, and therefore ought to be more successfully treated.

Cancer of the cervix, if it begins low down and the os externum has been enlarged by childbirth, can be diagnosed early. But if the os uteri has not been enlarged by childbirth and the disease begins high up in the cervical canal the cancer is seldom recognised early. Cancer of the cervix more rapidly spreads beyond the uterus than either of the other forms, and for these two reasons is less amenable to treatment.

Cancer of the body cannot be diagnosed so early as cancer of the vaginal portion, but it remains limited to the uterus longer, and therefore is longer amenable to treatment.

Value of the history in diagnosis.—I find the patient's age sometimes taken into account as if it were a factor in diagnosis. The patient's age ought not to influence opinion in the slightest degree. It does not follow that because the patient is at the age at which cancer is common that therefore her disease is cancer. Nor should you think that because the patient has not reached or has passed that age therefore the disease cannot be cancer.

The public know that a tendency to cancer is sometimes inherited. I have known the family history given as a reason for or against the view that a disease was cancer. It ought not to have the slightest weight. Only a small proportion of cancer patients inherit the disease, and many persons whose relations have had cancer die at a great age from something else.

The first symptoms of cancer are usually hæmorrhage and

leucorrhœa; pain and wasting come later. The early diagnosis of cancer is of such importance that any unusual hæmorrhage or discharge in a woman who has had children is a reason for vaginal examination, for it may be the first symptom of cancer. Sometimes hæmorrhage is the first, sometimes leucorrhœa.

The hæmorrhage caused by commencing cancer has about it nothing distinctive, either as to time, duration, or quantity. The leucorrhœal discharge has no character that is useful in diagnosis; it does not become offensive until the cancer has begun to break down, and fragments of decomposing dead tissue are contained in the discharge. We are dependent on the patient for information about its characters; and it is not wise to rely upon the indefinite data that she can furnish. Pain is not important as an indication of commencing cancer. Pelvic pain is common to many diseases, and there is nothing peculiar about the pain of cancer. Some cases of cancer run their course without pain.

Cancer causes wasting. This is not important for early diagnosis. To do good you must recognise the disease before it has lasted long enough to produce great wasting. Slight loss of flesh may come from many causes other than cancer. Sometimes during the progress of cancer patients for a time gain weight. Hence in doubtful cancer nothing is gained by postponing treatment in order to ascertain whether the patient's weight is altering.

In brief, therefore, hæmorrhage and leucorrhœa are the symptoms which in cancer first denote the presence of local disease, but the nature of this disease cannot be determined without local examination. Cancer of the vaginal portion and cancer of the cervix are common in women who have had children, less common in sterile married women, rare in the virgin. Therefore you need only urge local examination for hæmorrhage or leucorrhœa in the case of married women. The examination by the vagina of every virgin with a little leucorrhœa or hæmorrhage would unnecessarily wound female delicacy, and would be so rarely atoned for by the discovery of cancer of the vaginal portion in a curable stage that I think it is wiser, unless for some other reason vaginal examination is called for, to let the patient

run the very slight risk that cancer of the vaginal portion may be left too long untreated. Cancer of the body attacks virgins as often (in proportion to their number) as married or parous women; but this disease remains amenable to treatment for so long that, if it be present, you will not do harm by postponing examination until the existence of serious local disease is clear.

Local changes produced by cancer.—Cancer, wherever it occurs, displays the following features:—

1. It is a new growth, therefore the part it attacks is enlarged. In the later stages the destruction effected may make the part smaller, but in the beginning there is always enlargement.

2. It is a new growth which breaks down. Sooner or later this always happens.

3. The new growth affects all tissues; so does the breaking down; it is never limited by any anatomical boundary.

Apply these general statements to the uterus. Consider first the case of cancer so advanced that there can be no question about the diagnosis—also no doubt of the uselessness of treatment:—

1. The cervix is enlarged from the new growth. If the body of the uterus is affected it is enlarged.

2. It is ulcerated because the growth breaks down. The ulceration which follows an injury is a reparative process; it tends to fill up breaches of surface; at its edge granulation cells are being organised into fibrous tissue, which contracts and tends to pull the edge down to the level of the surface. The ulceration of cancer is caused by breaking down of tissue, and its edges are the places at which the breaking down is going on. Hence its edges are everted and often undermined.

3. The cervix is fixed because the growth invades all tissues.

These are the signs of cancer beyond the reach of treatment. We have to apply the first two of these criteria before the third has had time to develop. A new growth on the vaginal portion which tends spontaneously to break down is cancer.

1. Cancer of the vaginal portion.—As an outgrowth.

—When this begins as an outgrowth from the surface it may look like a growth of warts, or papillæ, or granulations, on the vaginal portion. The surface is not smooth; it feels uneven, or even rough.

The warty growth of commencing cancer is harder than the soft velvety erosion, and has a sharper edge. It soon begins to show signs of breaking down. When a cancerous growth is beginning to break down it looks as if it had been scratched, perforated, or worm-eaten. There are ecchymoses here and there; and if breaking down is rapidly going on, small spots of greyish slough will be seen. It bleeds when touched. It is friable; you can break away fragments with a curette. No innocent growth from the vaginal portion in the least resembles either a mushroom or a cauliflower. But cancer must be recognised before it has grown to dimensions which make such comparisons appropriate.

2. Ingrowth below the surface.—Cancer may begin as an ingrowth below the surface. The first evidence of its presence is an angry livid red spot, the surface being at first quite smooth.* The colour depends upon the vascularity caused by the new growth, and its tendency to break down, which leads to minute hæmorrhages into the growth before the breaking down is enough to make a breach of the surface. When the smooth livid surface of the cancer spot is rubbed it bleeds. A dark red spot, bleeding on contact, should make you suspect cancer. This is the earliest stage that has been observed. If there is not merely a patch of altered colour but a nodule that can be felt, the suspicion is still stronger.

Diagnosis from "granular erosion."—The only other new growth that is seen on the surface of the vaginal portion of the cervix is the so-called "granular erosion." The adjective is good, because the surface is granular; but the word "erosion" is a relic from a time when this condition had not been examined microscopically, and it was supposed that the epithelium was absent. The condition is a flat adenomatous growth. This may quite surround the os externum, or be limited to one lip of the os uteri. Its edge is not sharp. There is no abrupt change in the level of the surface. An erosion is most raised close to the os uteri, and slopes off

* Williams, "Cancer of Uterus," p. 9.

gradually into healthy tissue. A line defining the edge of the growth would have to be wavy, and interrupted in places, for within the scarlet new growth we find islets of healthy mucous membrane, and outside it we find dots of scarlet new growth outside the main patch. An erosion is deep scarlet in colour, and its whole surface is of the same colour. It is soft, and easily made to bleed, by the friction of the end of the speculum against it, or by rubbing it with wool to clean it. But there is no ecchymosis, no excavation, no sign of sloughing: and it is not friable.

Other conditions which may be taken for cancer.—*Red patches on the cervix.* Sometimes the mucous membrane over a defined area round the os externum is of a darker red than the rest, but is smooth and glistening, not granular, and does not bleed when it is rubbed. I think that these red smooth patches are the remains of erosions which have got well, so that their colour remains, although the granular surface has disappeared. I have examined such patches, and found that they were covered with pavement epithelium, and that beneath this epithelium were remains of glands such as are seen in granular erosions. These patches are red only, not livid; and do not bleed on contact.

Shotty follicles in cervix.—When the cervix has been split, is swollen by chronic inflammation, and has on it follicles filled with retained secretion, and feeling like shot embedded in the surface, we have a condition that I have known taken for cancer. But these blocked-up follicles, when looked at through the speculum, are, if their contents are unaltered, pearly grey in colour. If the retained secretion is inspissated, they are yellow. Prick them and the secretion will come out. The only elevations they form are slight smooth convexities. The mucous surface around them is not altered in colour. There is no warty growth, no lividity, and not the slightest appearance of any breaking down.

Fibroid.—A small fibroid of the cervix might be taken for cancer. A fibroid is distinguished by its smoothness, its hardness, its rounded outline, and by the fact that it does not break down or bleed on contact. It does not, like cancer, invade all tissues, but has its own circumscribed capsule. It may be congested, livid, and mottled, showing visible vessels

on its surface, but there is no excavating ulceration or warty outgrowth.

"*Herpetic erosion.*"—This is a change sometimes seen on a thickened cervix called the "herpetic erosion," viz. little vesicles, like miliaria, which leave red spots when the raised dome of epithelium is wiped away with a piece of wool. These vesicles may be taken for commencing new growth, but they denote no such thing. I have never seen them except on a thickened cervix. I agree with Scanzoni that they have nothing to do with herpes, and therefore the name herpetic erosion is a bad one. They are unimportant.

Spiegelberg's sign.—There is a tactile sign which Spiegelberg pointed out. It is that the growth of cancer beneath the mucous membrane alters the consistence of the tissues, and makes them less pliable, so that when the finger is pressed on and moved along the affected part the superficial tissues follow the movement imparted to them less easily than in the normal condition. Hence the feel of the cervix is peculiar; it has been compared to that of passing the finger over wet indiarubber. This simile is the best that I know of. This peculiar feeling is not present in every case, nor present throughout the whole course of each case; and therefore its absence is no proof that the disease is not cancer; but, when present, it should cause grave suspicion of cancer.

Chancre.—It has been suggested to me that a chancre, or condylomata on the cervix, might be taken for cancer. A chancre shows no sign of new growth, nor condylomata of breaking down. Induration is not appreciable on the cervix. The presence of secondary symptoms elsewhere and the effect of treatment would settle the diagnosis.

Dilatation by tents.—A test of cancer has been quoted in text-books on the authority of Spiegelberg.* He said that a healthy cervix would always yield to a tent, while a cancerous cervix would not. I am sure this is wrong, and in saying so I am in agreement with Winckel and Olshausen. I have often found a cancerous cervix dilate easily, and a non cancerous cervix so resist even a laminaria tent that

* "Arch. für Gyn.," Bd. iii., s. 233.

the tent was removed with difficulty, and after removal showed a groove where the internal os had prevented its expansion.

Lacerations.—Another sign that has been pointed out as a distinction between cancer and a cervix split into lobes by laceration during labour is that the fissures from tearing run from the canal outwards; while those between the nodules of a cancerous growth are irregular in their course. This is true, but of no use for early diagnosis, for when a cancer of the cervix is so big as to consist of nodules separated by fissures there will be other evidence putting the diagnosis beyond doubt.

Cancer of the cervical canal.—Cancer may begin in the cervical canal. If it begin high up and the os externum is not enlarged, it cannot be recognised early unless the cervix is artificially dilated. If it begin low down and the external os has been so enlarged by tearing during labour that the lower part of the arbor vitæ uterina is visible, then cancer can be recognised here as early as when it begins on the vaginal portion. The condition which causes difficulty in diagnosis is that in which the cervix presents the dense fibrous rounded elevations to which R. Barnes has given the name of "hypertrophic polypi,"* and which Matthews Duncan described in the words "hardness with big-grained roughness." In this condition we have red nodular growths at the lower part of the cervical canal; and if, in addition, the patient has symptoms which go with cancer—hæmorrhage, leucorrhœa, pain, wasting—the diagnosis of cancer may suggest itself. The macroscopical differences of this condition from cancer are—that a simple hypertrophic polypus does not bleed on contact; that it does not show any tendency to break down; that there is no ulceration, no point of sloughing anywhere; that it is not friable; and that this condition of "hardness with big-grained roughness" extends over an area of the cervix so considerable that cancer, if advanced enough to occupy such an extent, would certainly have begun to break down.

If symptoms suggest cancer, and nothing is perceived by finger and speculum to account for them, the suspicion

* "St. Thomas's Hospital Reports," 1872.

can be confirmed or negatived only by dilatation of the cervix. This done, the finger in the cervix will either feel the firm, smooth ridges of the arbor vitæ, or there will be at some part of the canal a friable nodule, or warty growth, or a ragged ulcer.

The microscope in diagnosis.—A diagnosis based on the microscopical examination of sections of tissue must be accepted with caution, for the following reasons:—

(1) Only an expert familiar with the microscopic appearances of the different parts of the uterus can form an opinion. (2) The judgment even of an expert on a scraping, or a broken-off bit, is of no value unless it be in the affirmative. Cancer may be present, and yet the bit examined may not be cancerous. Before you can be sure that a diseased part is not cancer, sections from every part of it must be examined. Now if you have to remove a large piece of a cervix in order to see whether there be cancer present in it or not, it is better to remove the suspicious part altogether. (3) There are growths occasionally met with in the uterus, called malignant adenomata, which resemble cancer as to their clinical history, but which microscopically present none of the characters of cancer. In simple erosions in women, and in erosions on the cervix uteri in monkeys, Bland-Sutton and Gordon Brodie have found structures exactly like those regarded as characteristic of cancer.

Negative microscopical evidence should never be trusted. The naked-eye characters and behaviour of the growth should be taken into account as well as its histology; and if the two conflict, the behaviour of the growth is the more trustworthy.

The effect of treatment.—In case of doubt, the behaviour of the suspicious part under treatment is a test. An erosion or a thick inflamed cervix may bleed on contact; but if one of these conditions is the only morbid change present, one or two applications of strong carbolic acid will so far improve the local condition that the diseased part will cease to bleed on contact. If the disease be cancer, these applications will stimulate its growth. Hence never prolong such experimental treatment.

Cancer high up in the cervical canal.—In this situation the beginning of cancer cannot be seen or felt, and

therefore it is impossible to diagnose it early. It may begin in two places at once. Cancer beginning high up in the cervical canal may assume various forms; it may be a papillary growth protruding into the cervical canal and through the os externum; it may form a solid mass, which presents at the os externum like a polypus; it may thicken the cervix, and then break down and excavate it, so that the whole thickness of the cervix may be eaten away, while there is little disease discoverable by the vagina. I have seen the cervix so broken down that it tore in half when it was pulled upon for the purpose of removal, and yet the ulceration visible at the os externum could be covered by a threepenny-bit. Cancer may extend superficially upwards and downwards, and break down quickly so that it forms a conical ulcer, which enlarges the external os, and extends up to or beyond the internal os. When it presents these forms, the diagnosis is clear, but the disease is beyond treatment. This form of cancer advances so fast, and its initial symptoms are so slight, that we seldom have the opportunity of diagnosing and treating it early.

The treatment of uterine cancer.—There is only one way of curing uterine cancer, and that is by its removal. Cancer of the uterus remains so long without implication of the lymphatic glands, or secondary growths in other organs, that the prospect of cure by its early removal is greater than can be offered in any other form of cancer. The essential condition for cure is that the cancer be early recognised.*

How to judge whether uterine cancer can be removed.—Is the uterus freely movable?—You cannot by ordinary vaginal or bimanual examination judge correctly as to whether cancer has or has not invaded the broad ligaments, until the cancer is advanced. To detect slight disease of the broad ligaments: (1) fix a volsella or hook in the cervix, and try to pull it down to the vulva. If you cannot do this the broad ligaments are probably invaded. (2) Holding the cervix down, put your finger in the rectum, and feel the utero-sacral ligaments to see if they are thickened. If you can pull the cervix down to the vulva, and you feel no thickening of either utero-sacral ligament, you can remove the cancer.

* For the early history of these operations, *see* West, "Diseases of Women."

Choice of operation — Amputation of cervix or extirpation of the uterus?—This depends upon the seat of the cancer.

(1) Cancer of vaginal portion.—If cancer is limited to the vaginal portion it can be removed by amputating the cervix. Schröder introduced this operation in 1882; it has been advocated in England by Sir J. Williams,* and through him has held its position longer in England than in other countries. The operation is known as "supra-vaginal amputation of the cervix." The adjective is used to distinguish it from the amputation merely of the vaginal portion, introduced by Osiander and Lisfranc, which is done for hypertrophy, and occasionally for inflammation of the vaginal portion, and was formerly done for cancer, before Schröder introduced his improved operation. The adjective is not required: excision of the whole cervix must be supra-vaginal. The main reasons in its favour were that, when Schröder introduced it, and Sir J. Williams published his work upon the subject, its mortality was less than that of extirpation of the uterus, and the percentage of recurrent cases not greater. But (*a*) since then the *technique* of extirpation of the uterus has been improved, so that there is now little difference in the mortality. For the cases now under consideration I think total extirpation the easier and safer. The mortality of hysterectomy attends chiefly the cases in which the uterine body is enlarged. (*b*) The partial operation has a difficulty and danger of its own which total extirpation has not; viz. that in the partial operation the uterine arteries are secured, but not the ovarian; and hence often there is oozing troublesome to stop. In complete extirpation both uterine and ovarian arteries are secured. (*c*) When the cervix is amputated for hypertrophy, stenosis and atresia can be prevented by stitching the mucous membrane of the cervical canal to that of the vaginal portion. But a feature of Schröder's operation is to scoop out a cone-shaped piece of cervix extending high up. When this is done, it is not possible so to stitch the mucous membrane within to that without as to prevent stenosis and atresia. Hence the frequent result is obstructive dysmenorrhœa, followed by hæmatometra; and possibly endometritis and

* "Cancer of the Uterus," 1888.

salpingitis. Should a patient become pregnant after amputation of cervix, the cicatricial os uteri may give trouble. To protect the patient from these troubles, I think it is better in operating for cancer always to remove the whole uterus. (*d*) You cannot always be sure, when you discover cancer of the vaginal portion, how far up the disease extends. There may be, although there seldom is, cancer high up in the cervical canal as well. If you amputate the cervix only, you may now and then find your operation incomplete from this cause. Your patient is secured against this if you remove the whole uterus.

A fallacious argument is sometimes brought forward in favour of removing the whole uterus. It is said that in cancer of other parts, *e.g.* the breast and the testicle, no surgeon would be content with removing a part only of the affected gland; that the greatest security is attained by removing the whole of the organ that is attacked. But the advantage of removing the whole gland in the instances specified is that a large margin of healthy tissue around the cancer is taken away. In the uterus, also, a margin of healthy tissue should be removed. But at the sides of the uterus you have to be content with a narrow margin of healthy tissue. If here you can only get a zone, say, of a quarter of an inch of healthy tissue, you will not get a greater chance of freedom from recurrence by removing two inches of healthy tissue above the disease, which is a wider margin than you can possibly get at the sides. Observations of cases of recurrent growth have shown that when cancer recurs after removal of the vaginal portion, it recurs in the cellular tissue; not in the stump of the uterus, which is what, from the above consideration, might be expected. The attainable margin of healthy tissue at the sides is as great in amputation of the cervix as in extirpation of the uterus.

(2) **Cancer of the cervix.**—Cancer in this situation is seldom found out early enough for its removal. But you may get such a case. Now in these cases there are additional reasons for preferring extirpation of the uterus to amputation of the cervix, namely, (*a*) if you treat such a case by amputation of the cervix, you must remove not only the cervix, but a part of the body of the uterus, cutting out a conical piece extending nearly to the fundus. This is more difficult, and therefore more dangerous, than removing the whole

uterus. (*b*) When the cervical canal is excavated by cancer, it is thinned, and it may be so thinned as to break when you pull it down to detach it from the body. This will make it more difficult to get away the upper part of the disease.

Fig. 129.—Sharp spoon.

The operation.—The following instruments are required:—

Clover's crutch.
Paquelin's cautery.
Sharp spoon (Fig. 129).
Four volsellæ.
Six Wells's large pressure forceps.
Ligatures and aneurysm needle with large curve.
Toothed dissecting forceps.
Scissors.
Duckbill speculum.
Retractors.
Sponges, sponge-holders, macintoshes, iodoform and insufflator.

Put the patient in the lithotomy position.

Preparation of the cancer.—In a patient who has cancer, if particles of the cancer be inoculated in other parts of the body, they will grow. If in removing a cancer, you touch with your instruments first the surface of the cancer and then a fresh wound, particles of cancer may thus be inoculated into the wound, and there grow. This theoretical view has been confirmed by clinical experience.* It is found that when (as in cancer of the body) the nature of the case is such that accidental inoculation of wound surfaces with cancer during the operation is unlikely, and when care is taken to guard against such inoculation, recurrence is less frequent than when the possible opportunities of inoculation have been abundant.

Therefore begin the operation by scraping away with a sharp spoon the friable surface of the cancer; and then, having got down to firm tissue, with Paquelin's cautery thoroughly burn the whole surface of the cancer, so that instead of living cancer tissue you have a dead burnt crust.

* See Winter, "Zeit. für Geb. und Gyn.," Bd. xxvii.

The detachment of the cervix.—Seize the cervix with two volsellæ. These are the only instruments which must inevitably touch the cancer, and therefore they must on no account touch the wound. Therefore having fixed these volsellæ in the cervix, do not remove them. Pull the cervix down to the vulva. Hold the perineum back with a Simon's retractor. Ascertain the line of vaginal reflexion by grasping

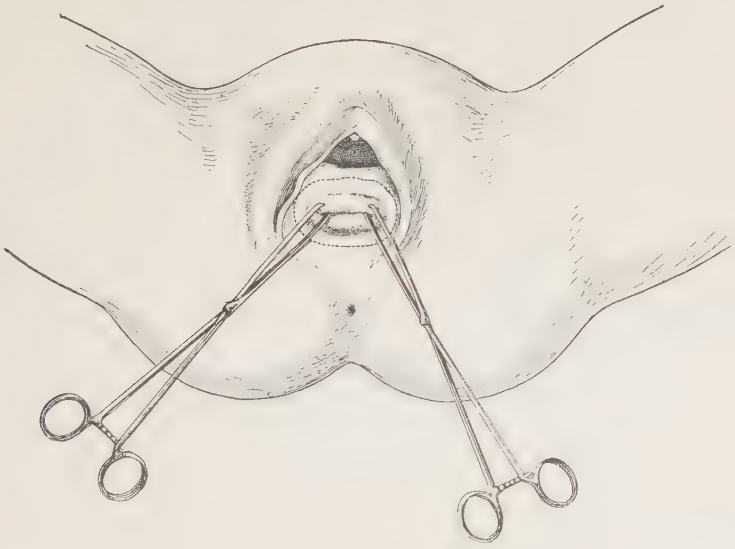


Fig. 130.—First step in hysterectomy : div'sion of vagina round cervix. (*After Doyen.*)

the mucous membrane and noting the line at which you begin to be able easily to pull it from the uterus. Then with scissors cut through the mucous membrane behind, making your incision concave behind so as to surround the cervix posteriorly. Then cut farther on in the middle line, so as to open the pouch of Douglas. When you have made a small hole in this peritoneal fold, put in your fingers and tear it open until the opening is as large as that in the mucous membrane. Now remove the speculum, and pull the cervix down and back so as to bring the anterior vaginal wall within reach. Cut transversely through the mucous membrane, at a point just below where you can pull it freely away from the uterus, and extend the incision round the cervix until it meets the one behind

(Fig. 130). In the centre cut through the cellular tissue quite down to the muscular wall of the uterus. Then with the fingers strip the bladder and ureters off the uterus and broad ligaments, taking care to separate them extensively at the sides (Fig. 131). Upon this extensive lateral separation depends the safety of the bladder and ureters. The uterus is now free in front and behind, attached by the broad ligaments at the sides, in which run the uterine and ovarian

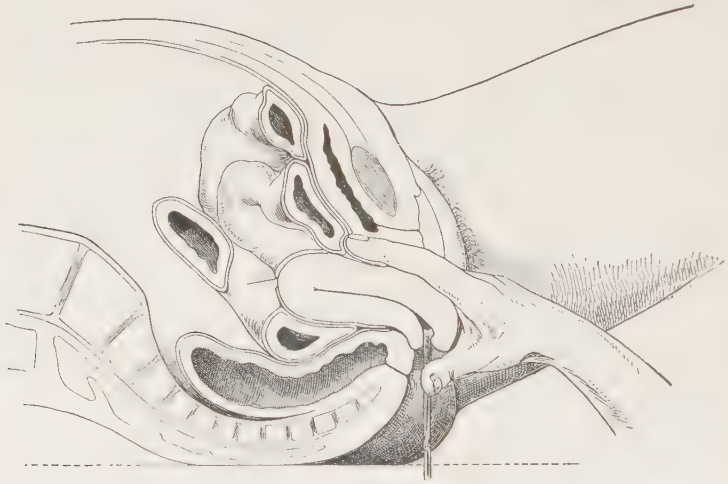


Fig. 131.—Separation of bladder and ureters from cervix. (*After Doyen.*)

arteries. Feel with the finger and thumb in front and behind each broad ligament where the uterine arteries are, and free the cervix uteri by cutting through the tissues on each side nearly, but not quite, up to the uterine arteries. If you do not cut these important vessels, the bleeding will not be formidable.

Ligature of the uterine arteries.—Many needles have been made with which to tie the broad ligaments. The best is a blunt-pointed needle, curved like an aneurysm needle, and of such size that the terminal part, which carries the needle, and runs transversely to the handle, is about an inch and a half long. Having felt a uterine artery, pass the needle (threaded with number 5 China twist) through the broad ligament above the artery, keeping it about a third of an inch from the uterus. Tie the ligature as tightly as you can.

Seize the ligature and withdraw the needle. Do the same on the opposite side.

Doyen, before ligaturing each uterine artery, crushes the tissues with a powerful compressor, the angiotribe. Many operators get good results without this; but it is nevertheless a help to secure tying (Fig. 132). The difficulty in tying is that it has to be done down in a hole, so that, if after the first hitch has been pulled tight, it slips, the operator may not notice the slip, and then the knot will be loose and insecure.

Bringing out the uterus.—Cut the cervix uteri free from

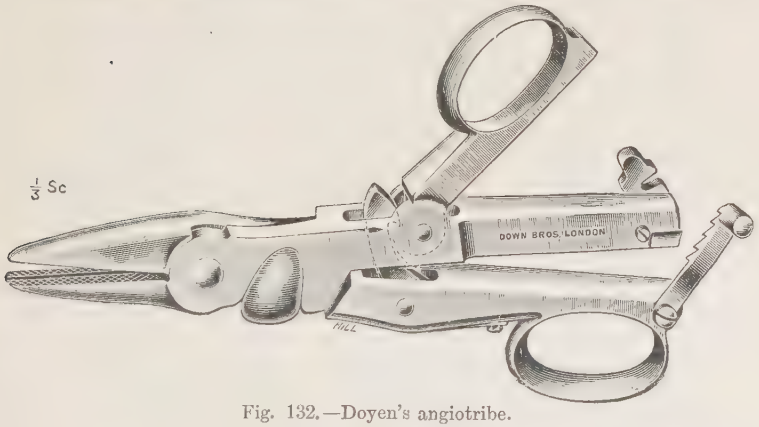


Fig. 132.—Doyen's angiotribe.

the cellular tissue on each side, taking care not to cut too close to the ligatures. Then seize the cervix with two volsellæ, one on each side of the anterior lip. With scissors cut in the middle line up the anterior wall of the cervix and body of the uterus (Fig. 133). As you cut, seize higher and higher parts of the uterus with volsellæ, and so pull it further and further down (Fig. 134). You will soon find the fundus uteri easily slip out (Fig. 135). You now have the uterus outside the vulva, attached by its body to the upper part of the broad ligaments. Transfix a broad ligament with an aneurysm needle carrying a double ligature. Tie the broad ligament with two interlocked stitches. Then cut the uterus free on the uterine side of the ligature, taking care to leave enough tissue to prevent the ligature from slipping. The uterus is now attached only by one broad ligament. Tie this in like manner, and cut the uterus away. Cut the ends of the liga-

tures short after tying them, so that they may not be pulled upon. Lightly pack the vagina with iodoform gauze; this will help to keep the discharge aseptic. Leave it in for a week. During the operation hold the cervix by volsellæ, and, if possible, avoid touching it with the fingers or letting it come

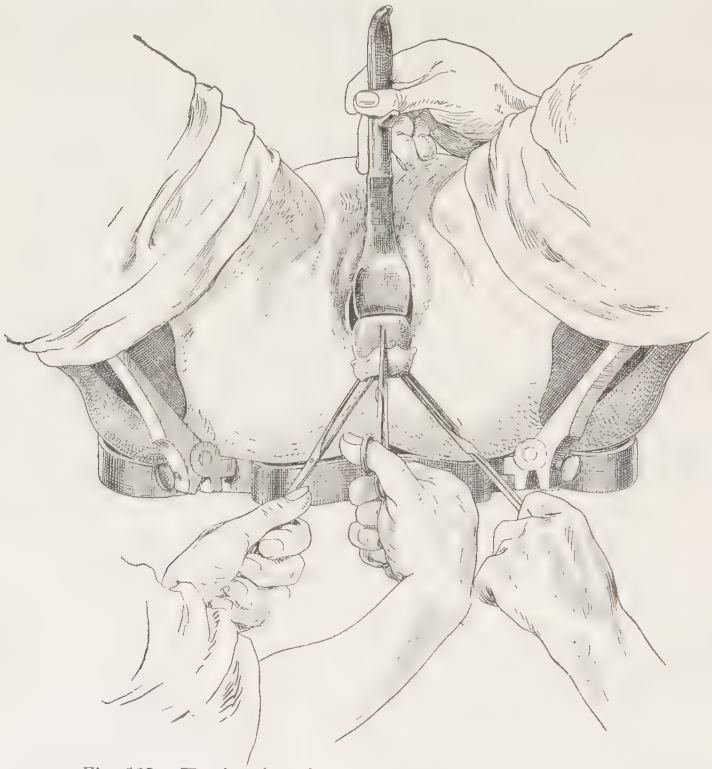


Fig. 133.—Hemisection of uterus commenced. (*After Doyen.*)

into contact with the cut surface of the vagina. Do not use to cut away the uterus the same scissors with which (in bisecting the anterior wall) you cut through the cancer.

Superfluous complications.—Additional precautions are taken by some operators. One is to put a sponge (with a string tied round it) in the peritoneal cavity to keep the bowels back while the broad ligaments are being secured. This is unnecessary, for the fingers can protect the broad ligaments: a small sponge will not keep the bowels back, and a large one may pull them down as it is being removed.

Some stitch the peritoneum together in front and behind. This takes time, involves more prolonged exposure and manipulation of the peritoneum, and is unnecessary, because the parts naturally fall together without any ligatures.

Dangers of the operation.—The main risks of this operation are three:—(1) *Septic poisoning.* This is to be prevented by antiseptics. (2) *Hæmorrhage.* This is to be

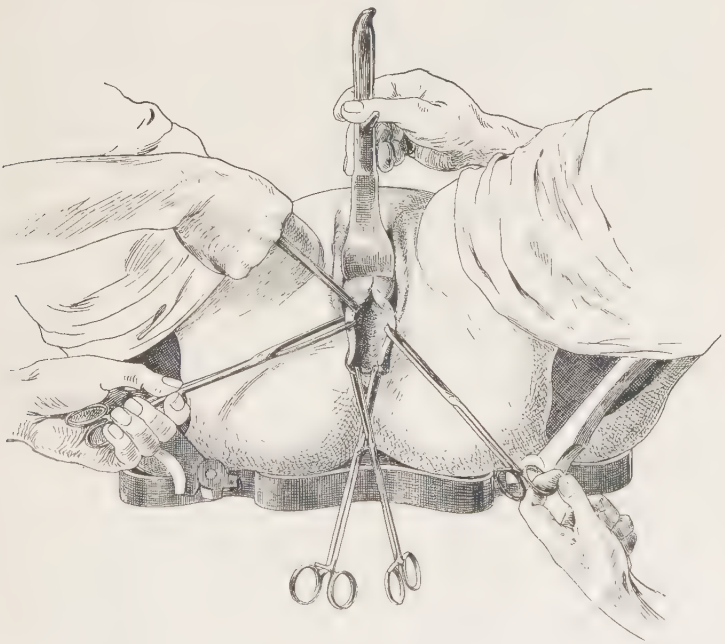


Fig. 134.—Hemisection of uterus in progress. (*After Doyen.*)

prevented by care in the application of ligatures or pressure forceps. (3) *Injury to bladder or ureters.* These may be either directly wounded, or they may be included in forceps or ligatures. This is to be prevented by separating the parts in front widely at the sides. If known to be wounded the wound should at once be stitched up.

Operations in unsuitable cases.—In unsuitable cases bad results are apt to follow extirpation of the uterus. Extension of cancer into the broad ligaments makes the tissues more friable: therefore ligatures do not hold so well, and there is

greater risk of hæmorrhage: and attempts to cut wide of the disease bring danger of wounding bladders or ureters.

Cancer may attack a cervix that is fixed by inflammatory adhesions. If the cancer is clearly limited to the vaginal portion, the right treatment is to separate the adhesions, pull down and remove the uterus. But when a cervix is affected with cancer and is fixed, it is difficult to be sure how far

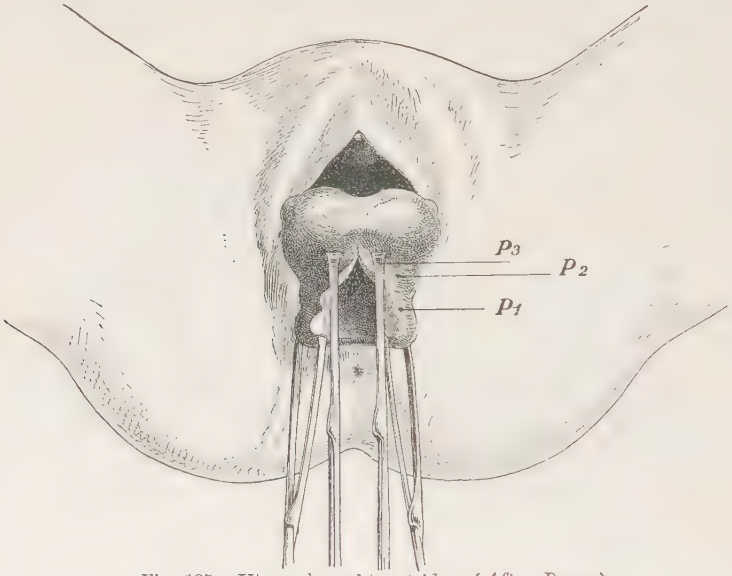


Fig. 135.—Uterus brought outside. (*After Doyen.*)
*P*1, *P*2, *P*3—sites of successive grasps of volsella.

the fixation is due to adhesions, and how far to cancerous growth; for cancer of the vaginal portion may be accompanied by cancer higher up. Bearing in mind this, as well as the greater difficulty of the operation in such cases, an inexperienced operator will do wisely to decline operating in such cases. The probability of an immediate ill result from the operation, or of failure completely to remove the disease is in such circumstances greater than the prospect of cure.

Incomplete operations for cancer.—However careful you are in ascertaining the mobility of the uterus before advising operation, you will sometimes meet cases in which the uterus when examined by the ordinary methods seem mobile, and yet when the patient is anæsthetised some slight loss of

mobility, or some little induration in a broad ligament is perceived. If it is clear that any attempt to remove the disease will do more harm than good, none should be made. But in case of doubt, it is better to err by incompletely removing the disease than by doing nothing; because (1) the fact of doubt implies that there is a possibility of error, that your unfavourable view may be wrong, and that you may perhaps get the whole disease away; (2) an incomplete operation will relieve symptoms for a time: sometimes a long time. (3) If you have told the patient what is the matter, have raised hope of cure (and you cannot persuade her to submit to operation without doing this), and induced her to face the anxiety, risk, and suffering of an operation; and then when she has done this you have to tell her that hope of cure has been abandoned, grave nervous shock will be the consequence. For these reasons, an incomplete operation is sometimes unavoidable, because the best thing for the patient. I speak only of cases in which there is doubt; not of those in which it is certain that removal is impossible.

Mortality.—The mortality from this operation is low. If only favourable cases were taken, it would be very low. But an operator who gives not up cases in which it is doubtful whether the disease is limited to the cervix will meet with some in which misadventures occur.

Proportion of cures.—The result as to cures has been that from one-fourth to one-fifth of the subjects of the operation remain free from recurrence for three years. A patient who has remained so long as this free from recurrence is not likely to have it, and may be considered cured. This proportion of cures has been attained by those who practised the operation before the possibility of inoculating cancer during the operation was suspected, and who therefore took no special precautions to prevent such inoculation. With such precautions, there is reason to hope that the number of cures may be increased.

Removal with the cautery.—Dr. Byrne of New York* advocated in 1893 the use of the cautery in severing the uterus from its attachments, and Dr. Herbert Spencer in this country has adopted the practice. It is claimed that by

* "American Gynecological Transactions," vol. xvii.

this method accidental inoculation of the wound surface is made impossible; that a slight extension of growth outward from the uterus is destroyed; and that therefore permanent cure is more frequent. But it is possible to avoid inoculation of the wounds when the operation is performed with scissors. American operators have not paid Dr. Byrne the compliment of imitation so extensively as would have been expected had the superiority of his method been fully demonstrated.

Wertheim's operation.—Wertheim* has shown that there are a few cases in which, when the patient is first examined, the disease is found to have extended into the cellular tissue, and yet the extension is so localised that the cancer in the cellular tissue can be shelled out and removed along with the uterus, with permanent cure as the result. These cases can only be few, for it must still be the rule to remove cancer of the uterus as early as possible, before it has invaded cellular tissue, and in neglected cases the cancer will often be found too extensive for removal, even by Wertheim's method.

This can only be done by abdominal section. After opening the abdomen, the operator must separate the bladder from the uterus, and dissect out the ureters, taking care not to deprive them of the sheath of cellular tissue in which their blood-vessels run. Then the ovarian and uterine arteries must be tied near their origin. Douglas's pouch is then opened, and the peritoneum forming the posterior fold of the broad ligament lifted up. Then the cancer in the cellular tissue is enucleated, and removed with the uterus. If there are any enlarged glands they are removed also; but it is not the object of the operation to remove diseased glands, and if the cancer has extended to the glands recurrence is practically certain. This operation is a difficult one: its mortality is at present much higher than that of vaginal hysterectomy. Doubtless experience will lead, as it has done in all operations, to improvement in technique and reduction of mortality. The prognosis in uterine cancer is so distressing that it is worth the patient's while to run considerable risk for the chance of cure.

Palliative treatment of cancer.—Much good can often be

* *Brit. Med. Journal*, 1905, vol. ii.

done by the surgical treatment of cancer too advanced for complete removal. The bleeding and discharge are mainly caused by the breaking down of the cancer. The breaking down occurs where the growth is oldest. Now if the older part be removed, so that the surface left is made of healthy tissue with bits of cancer scattered in it, the healthy tissue will heal; and the bits of cancer, being recent, will not quickly break down, and, being small, will not cause great hæmorrhage or discharge when they do. Pain is also sometimes much relieved by such an operation; but this effect is less easy to understand and does not so constantly follow.

Scraping.—When the cancerous uterus is fixed and hæmorrhage and discharge are profuse, you may confidently promise much temporary benefit from scraping. The patient being anæsthetised, scrape away as much as you can of the friable cancer tissue with a Simon's sharp spoon. This done, burn away with Paquelin's cautery the wall of the cavity made by the spoon as far as you can with safety. The old part of the cancer can be scraped away with a spoon more quickly than it can be burnt with the cautery; but where the cancer has but recently invaded healthy tissue it is firmer and the spoon will not easily remove it; therefore here the cautery is better.

The effect of an operation of this kind is to lessen bleeding and discharge, and therefore to retard the advance of cachexia. The duration of the effect depends upon the rate of growth of the cancer, and the thoroughness with which the operation is done. If the cancer is growing fast, the benefit may only last a few weeks; but I have known the cancer seem to be in abeyance for a year. This operation is not worth doing if hæmorrhage and discharge are slight; and, seeing that the benefit is only temporary, do not urge the operation upon a reluctant patient.

Other ways of doing the same thing have been proposed and tried. Marion Sims, and others following him, applied chloride of zinc paste. The effect of this agent cannot be foreseen or controlled; it gives great pain and may do greater damage than was intended. With Paquelin's cautery, the tissue is destroyed under anæsthesia, and the extent of the destruction is entirely under the control of the operator. It

has been proposed to cure cancer by injecting caustics, such as bromine, into it, so as to make it slough; or by repeatedly applying chloride of zinc or potassa fusa to its surface, so as to produce a succession of superficial sloughs. It is possible, when cancer is limited to the vaginal portion, to destroy it by such means, and therefore cure may be and doubtless has been attained by them. But it is a clumsy and dangerous way of doing it. Applications of pure formalin are reported to be beneficial.

The relief of pain.—There is only one drug which can be relied on to relieve severe pain, and that is morphia. It acts best when combined with atropine and injected under the skin. You may give morphia liberally, seeing that the natural course of the disease is to cause death before morphia-taking has had time to produce any very bad effects. Morphia relieves not only the persistent pain of cancer, but the bladder and bowel irritation, and the pain felt in micturition and defæcation. Suppositories are not so efficient as hypodermic injection. Morphia is better than opium, because it interferes less with digestion.

There are other sedatives. In the wakefulness due to anæmia rather than to pain, bromides will be useful. Atropine, cannabis indica, chloral, hyoscyamus, conium, antipyrin, phenacetin, paraldehyde, sulphonal, trional, chloralamide, chloralose, &c., may be tried; but not one of these drugs can be depended on for relieving the pain of cancer.

Lessening of discharge and of fœtor.—The amount of discharge can be lessened by astringent injections, such as zinc chloride (gr. v.–x. ad Oj), acetate of lead (ʒj ad Oj), alum (ʒij ad Oj); and its fœtor can be diminished by antiseptic douches, such as carbolic acid (1 in 40), peroxide of hydrogen (1 in 10, or stronger), permanganate of potash (ʒj ad Oj, or stronger). Great cleanliness, frequent syringing and washing, and an unlimited supply of clean napkins or pads are essential for the reduction of fœtor.

Corroding ulcer of the uterus.—This is a rare disease, first described by Sir Charles Clarke,* and more recently by Sir John Williams,† in whose paper references to other writers

* "Diseases of Females attended with Discharges."

† "Obst. Trans.," vol. xxvi.

about it will be found. It consists of an ulcer on the cervix, which spreads, destroying as it does so all the tissues in its way (Fig. 136). It thus clinically much resembles cancer. But it is not cancer, for microscopic examination has failed

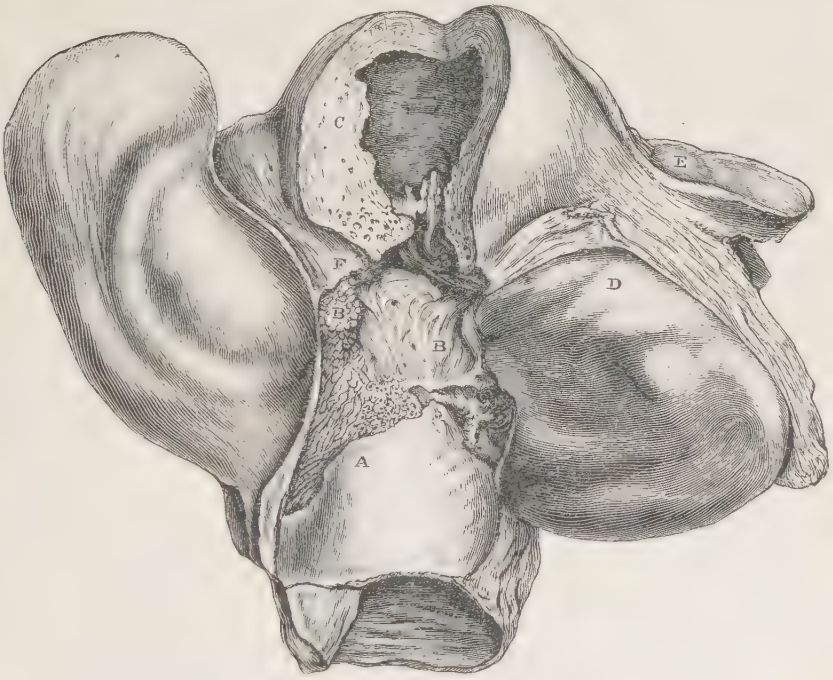


Fig. 136.—Corroding ulcer. (*After Sir J. Williams.*)

A, vagina; B, ulcer, exposing subperitoneal fat; C, uterus; D, bladder; E, broad ligament; F, vesico-uterine cellular tissue.

to find any structures like those of cancer or epithelioma in it. The base of the ulcer is formed by the tissues of the part with some round cells. The ulceration does not advance by the separation of large sloughs, but by slow destruction of the tissues at its edge. The surface of the ulcer is never ash grey or sloughy in appearance, but dark red and easily bleeding. There is no appearance of new growth at its edge.

The progress is slower and its course longer than that of cancer, some patients living ten years or more, and finally dying of some other disease. It is not attended with such

emaciation as is usual in cancer, and it causes but little pain. Pain, when severe, is usually not till late in the disease, and is then paroxysmal, and due to accumulation of discharge in the body of the uterus. There is discharge, either purulent, muco-purulent, blood-stained, or, if it has been retained, offensive; great hæmorrhage is not usual. The disease seldom attacks patients before the climacteric. The disease, although not cancer, is clinically malignant; that is, incurable and leading to death. The only treatment is to keep the part clean.

We know nothing of its pathology. Sir J. Williams has suggested that some cases may be lupus, on the ground that in one of his cases tubercles and cicatrised surfaces were observed like those in *lupus vulgaris*. But these appearances have not been observed in other cases; and lupus is a disease of the young, rarely beginning after thirty, while corroding ulcer is a disease of the old. He has also suggested that some may be allied to senile gangrene; on the ground that in one of his cases the arteries supplying the diseased part were calcified; but sloughs are not found. Beuttner* has described similar ulcers on the vagina, and attributes them to deficient blood supply in consequence of sclerotic thickening from endarteritis of the vaginal arteries; this sclerosis not only lessening the blood supply, but preventing the establishment of a collateral circulation.

Sarcoma of the cervix.—Sarcoma of the cervix such as could be taken for cancer is rare. But a few cases have been described, by competent observers, of soft, papillary, œdematous rapidly growing outgrowths from the cervix, occurring in young subjects, which upon examination after removal proved to be sarcomatous.† The names given to these exceptional tumours indicate their nature. Thus Spiegelberg has described "*sarcoma colli hydropicum papillare*," Rein "*myxoma enchondromatodes arborescens colli uteri*." These cases are so rare that it is not possible to make any general statements about their clinical history. They would be usually taken for cancer, and, as the treatment is the same, the mistake would

* "Monat. für Geb. und Gyn.," Feb. 1896. *See* "Year-book of Treatment," 1897.

† *See* Roger Williams, *British Gynæcological Journal*, May, 1897.

be unimportant. If seen at a very early stage, such a tumour might be taken for a simple mucous polypus, but if the case were watched, in a short time either the rapid growth of the supposed mucous polyp, or its quick recurrence after removal, would reveal its nature. As sarcomatous growths are often multiple, in sarcoma of the cervix it is sound practice to remove the whole uterus.

CHAPTER XXVII.

MALIGNANT DISEASES OF THE UTERINE BODY.

Consider now a case in which, with hæmorrhage, the cervix uteri is healthy, but when the cervix uteri has been dilated, and the interior of the uterine body examined, there is evidence of new growth.

A fibroid projecting into the uterine cavity forms a convex bulging with a smooth surface. If a fibroid in the wall do not bulge so as to form a convex swelling, yet the endometrium, if a fibroid is the sole disease, will be smooth, without papillary or warty projections or ulceration.

We may find, when the cervix is dilated, that the inside of the uterine body is rough; that there are outgrowths, not firm, smooth, and convex, but warty and friable; or that there is ulceration; or both. If this be the condition, we have to do with one of the forms of malignant disease of the body of the uterus. These are *cancer, sarcoma,* and *malignant adenoma.*

CANCER OF THE UTERINE BODY.

Frequency.—The relative frequency of cancer of the body of the uterus, as compared with cancer of the cervix, is as 1 to 50. Cancer of the body may be commoner than is supposed, because it is difficult of diagnosis, and therefore sometimes may have been overlooked in the groups of cases upon which statistics have been founded.

Influence of age.—Cancer of the body of the uterus, like cancer of the cervix, may occur at almost any age. But the most common age at which it arises seems to be rather later than that at which cancer of the cervix is common. Thus in the cases related by Williams the average age of the patients with cancer of the cervix was 41·8 years; of those with cancer of the body 53·2 years. In the collection of Ruge and Veit the patients over fifty were twice as numerous as those under fifty.

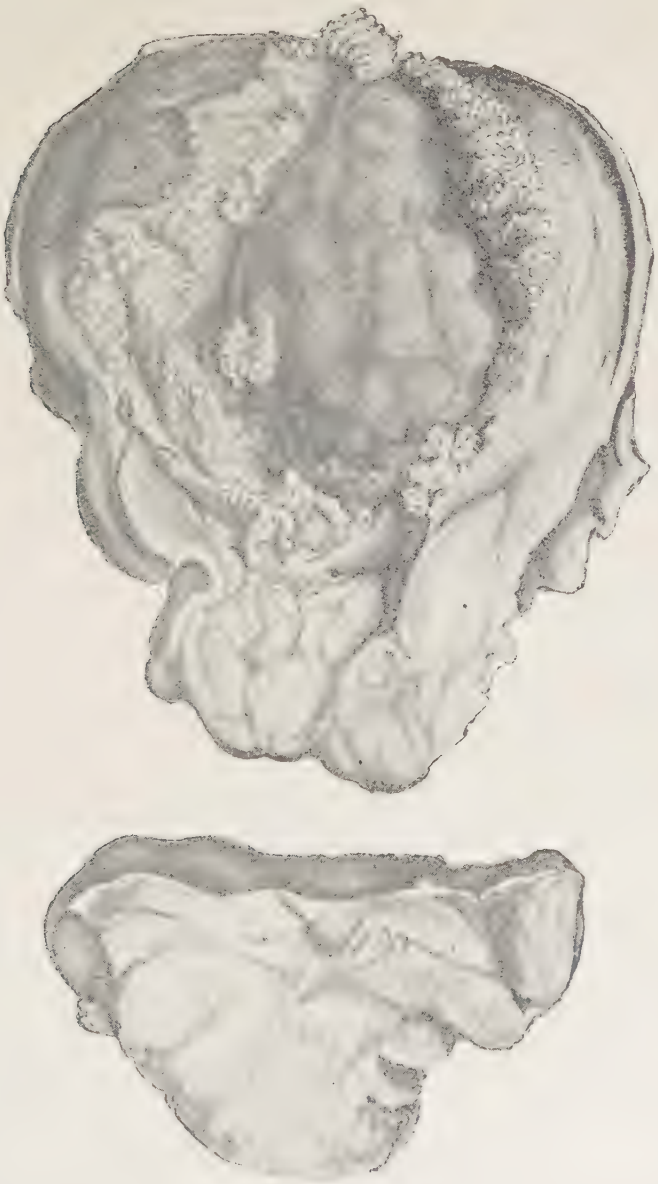


Fig. 137.—Cancer of uterine body. (*After Sir J. Williams.*)

Childbearing.—While cancer of the cervix is commonest in women who have had many children, cancer of the body does not appear to have any relation to childbearing. Ruge and Veit's * figures show that it occurs as often in the nulliparous as in those who have had children. Among Williams's cases there were more nulliparæ among those suffering from cancer of the body than among those with cancer of the cervix.†

Influence of local irritation.—The cases collected by Ruge and Veit also go to show (although the number bearing on this point is small) that the menopause is often delayed in patients who afterwards become the subject of cancer of the body. They draw from this the inference that local irritation probably plays the same part in the production of cancer of the body of the uterus that it does in the production of cancer elsewhere. But we know not the causes of local irritation which delay the menopause and produce cancer. The relation of endometritis to cancer I shall discuss subsequently.

The foregoing general statements throw not much light on the causation of the cancer of the body of the uterus, but they represent all we know.

The circumscribed form.—Cancer of the body of the uterus is usually described as occurring in two forms—the circumscribed and the diffuse. In the *circumscribed* form the disease occurs as round nodules in the uterine wall (Figs. 137, 138). These growths may project into the uterine cavity like polypi. They may be sunk deeply in the uterine wall, so as almost to reach the peritoneum while yet in a comparatively early stage. There may be one, or two, or several, of different sizes. But they have never been found without disease of the mucous membrane over them. The mucous membrane where these growths are not present is apparently healthy.

Diffuse form.—In the *diffuse* form the whole interior of the uterus is lined with villous or warty growths. The disease probably begins at one or more spots, and may therefore be said to have been circumscribed in the beginning. But there appears to be this difference, that while in the

* "Zeit. für Geb. und Gyn.," Bd. vi.

† "Zeit. für Geb. und Gyn.," Bd. vi. p. 105.

circumscribed form the disease tends to grow deep into the uterine wall towards the peritoneum, in the diffuse form it tends to spread over the mucous membrane. It usually

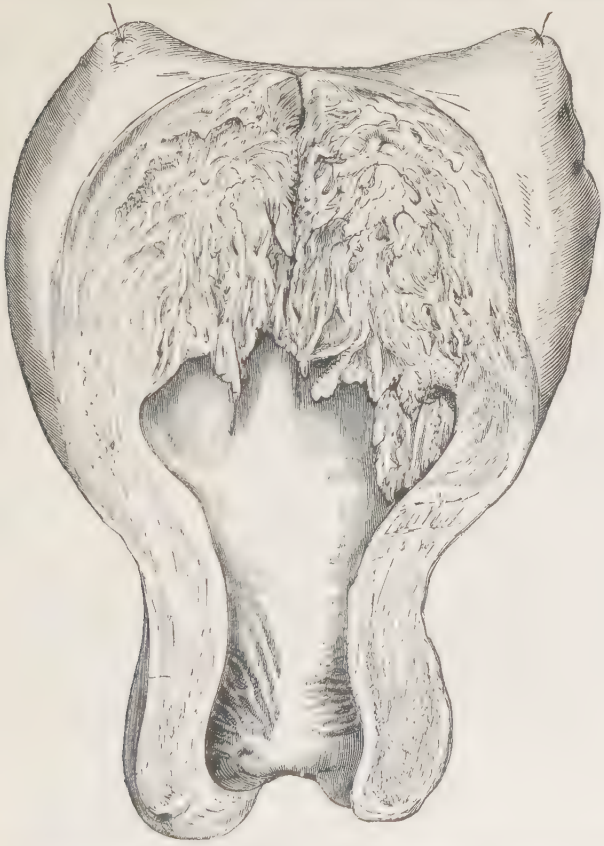


Fig. 138.—Cancer of uterine body. (*From a specimen in the St. George's Hospital Museum.*) (*After R. Barnes.*)

stops at the internal os; but, when advanced, may spread down the cervix.

Enlargement of the uterus.—Cancer of the body usually is accompanied with enlargement of the organ. It has been suggested that this is due to its exerting a stimulus like that of pregnancy and so making the organ grow. But the enlargement is often not more than is accounted for by the presence of new growth, or by supposing that the uterus

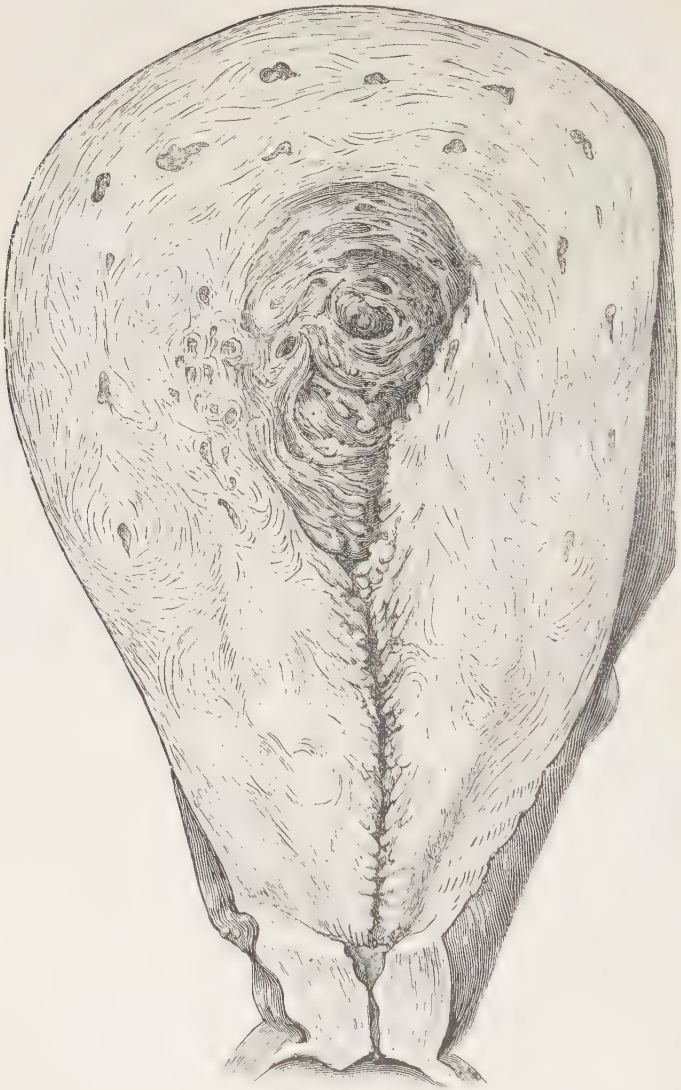


Fig. 139.—Cancer, with great enlargement of uterine body. (*By permission of Sir J. Williams, from a specimen in St. Bartholomew's Hospital Museum.*) (*Reduced.*)

before growth of the cancer had been enlarged from sub-involution. Enlargement is not always present. There is a specimen in the museum of the London Hospital in which the uterus is small.

There is a rare form of uterine cancer in which the disease produces great diffuse thickening of the uterine wall. There is a specimen of this kind in the museum of St. Bartholomew's Hospital, in which the uterus measured eight inches in length, and weighed 4½ lb. (Fig. 139). It was examined by a competent histologist, and its structure found to be that of hard cancer. Another specimen of what looks like a similar disease is in the museum of the Royal College of Surgeons: it was placed there by Mr. Roger Williams, who describes its structure as being that of "colloid cancer." Another is in the London Hospital Museum. It looks, as do the other specimens, something like a fibroid, but it was examined by Sir A. Clark, who was curator of the museum at the time it was put up, and found to be cancer. Sir J. Simpson* says that cancer sometimes attacks the whole thickness of the uterine walls without producing any protrusion externally. The villous or polypoid growths may reach a great size, and distend the uterine cavity. Simpson depicts such a polypoid growth enlarging the uterus till it was 7 in. long by 3¾ in. wide (Fig. 140). Such growths may first enlarge the uterus and then break down, and by progressive infiltration and ulceration convert the uterus into a sac with thin, rigid walls; and the ulceration may go on till it eats through into the peritoneum. Such a specimen is in the London Hospital Museum (No. 2,166), put there by the late Dr. F. H. Ramsbotham. Cancer may also lead to blocking

Fig. 140.—Cancer of uterine body, enlarging it. One-third natural size. (*After Sir J. Y. Simpson.*)

* "Works," vol. iii.

of the cervical canal, retention of discharge and dead tissue in the uterine cavity, and consequent distension of the uterus.

Secondary cancer of the uterine body.—Cancer of the body may be secondary to cancer of the cervix. The body does not become affected by extension from the cervix till late. Such extension of course affects the part near the os internum. But in about one-third of such cases secondary cancerous nodules are present, and it is important to remember that such nodules may be present before cancer of the cervix is far advanced.

As a mucous polypus of the cervix may become cancerous, so may a mucous polypus of the body. Cancer may also attack the mucous membrane covering a fibroid, and then invade the fibroid.

Spread of cancer of the uterine body.—The growth of cancer of the body of the uterus remains for long limited to this part. But when far advanced it involves the cervix and the Fallopian tubes. It spreads deeply, invading the peritoneum, setting up local peritonitis, and leading to adhesions; by its breaking down an opening into the bowel may be formed. The lumbar glands become affected (according to Ruge and Veit*) relatively early. Secondary growths may occur in almost any part, the vagina being a frequent seat. The cellular tissue is not usually affected till late, a fact of importance in treatment. For this reason it is uncommon for cancer of the body of the uterus to lead to blocking of the ureters, and therefore uræmia as a mode of death is not common in this form of cancer. Death by peritonitis is commoner than in cancer of the cervix.

Histology.—Cancer of the body of the uterus begins in the epithelium either of the glands or of the surface. It is possible that the difference between the circumscribed and the diffuse form may be that the former begins in the deep parts of the glands, the latter on the surface; but of this there is at present no proof.

Malignant adenoma.—Ruge and Veit describe two forms. In the one there is a sort of "tangle" of gland tubes lined with columnar epithelium, with scanty connective tissue

* "Zeit. für Geb. und Gyn.," Bd. vi. S. 304.

between them. In some parts the epithelium will be of regular columnar type, though perhaps smaller or larger than normal; while in some parts places may be seen at which the columnar cells are slightly altered in shape, approaching the squamous type, and getting many-layered; in fact, approaching the second type presently to be described. This form has been described by Matthews Duncan under the title of *malignant adenoma.*

Alveolar cancer.—The second form is what Ruge and Veit term *alveolar cancer.* In it the glandular acini are widened at the expense of the inter-glandular tissue. The character of the epithelium is changed, so that ciliated columnar epithelium is only seen over a small part of the follicle, or is absent altogether; while the lumen is contracted by heaping up of many layers of cells of various shapes and sizes, but of squamous type, flat and large. The inter-alveolar stroma is formed of fibrous bands interlacing, but leaving wide open spaces between them. In some places the glandular acini will be found quite filled with cells of squamous type, so as to leave no lumen at all, thus forming strings and clumps of cells. In cases of hard cancer, with great thickening of the uterine tissue, the stroma is abundant, as compared with the epithelial growths.

Value of the microscope in diagnosis.—Although the microscope is of great service in establishing the nature of a morbid growth, yet it can only be relied upon when taken in conjunction with clinical phenomena. There are fallacies which make difficult the diagnosis of cancer from the microscopic examinations of scrapings. At the climacteric period, the endometrium undergoes retrogressive changes; it becomes thin; the stroma and the glands atrophy, and in the process of atrophy of the glands (according to Ruge and Veit) their cells alter their shape, enlarge, and thus approach the squamous type, and they may become many-layered and project into the lumen of the gland so as partly or wholly to fill it. It is impossible from a minute shred of tissue to distinguish between changes such as these and cancer. The microscopic diagnosis should only be trusted when the appearances are well marked and supported by the clinical history and the macroscopical signs. Between malignant

adenoma and benign adenoma (also known as hyperplastic endometritis) the difference is only one of degree. The gland tubes are, in the former, larger and closer together; in other words, the glandular overgrowth is more marked than in the latter. But we may find parts of a malignant adenoma which present appearances in no way to be distinguished from those of hyperplastic endometritis.

Symptoms.—The symptoms of cancer of the body of the uterus much resemble those of cancer of the cervix, except that pain occurs earlier, and is more severe. This is, first, because the body of the uterus is more sensitive than the cervix; second, because the projection into the uterine cavity of masses of cancer, and of pieces of broken-down tissue, provokes painful contraction of the uterus. Sir James Simpson observed that the pain frequently recurred at a certain hour in the day, and after a longer or shorter duration ceased. Ruge and Veit say that they have not seen this regularity, but have observed relief to pain following the expulsion of fragments of tissue.

Fœtid discharge may or may not be present. If the cavity of the uterus be so excavated by the disease as to be enlarged, fragments of dead tissue are likely to be retained and decompose and cause fœtor. If the cavity be not enlarged, so that retention of dead tissue and discharge do not take place, then there is not fœtor. Hæmorrhage, as in cancer of the cervix, is usually the first symptom. It presents no peculiarity which distinguishes it from hæmorrhage due to fibroids or endometritis.

As the disease advances, cachexia becomes marked. It is rather later in onset than in cancer of the cervix, probably because the patients are rather older. The symptoms which result from extension of the disease to other parts are the same as those caused by similar extension of cervical cancer.

Diagnosis.—The diagnosis of cancer of the body of the uterus cannot be made simply by bimanual examination. By this you may find enlargement of the body of the uterus, the cervix being healthy. If the disease be in an early stage, the enlargement of the uterine body will not be great, and it will be regular, preserving on the whole the natural shape of the organ. These physical signs being all that can be found

to account for the symptoms, the cervix should be dilated, and the interior of the uterus examined with the finger. New growth will be felt, either a soft, ragged, villous surface, or polypoid outgrowth, according to the way in which the growth has begun. The diagnosis is made more sure by scraping away a piece and examining it microscopically.

Treatment.—The only prospect of cure in cancer of the body of the uterus is in the removal of the whole uterus. Owing to the comparatively late period at which secondary growths occur in cancer of the uterus, as compared with cancer in other parts, the operative removal of cancer of the uterine body offers a better prospect of permanent cure than do most operations for the removal of cancer.

The credit of the introduction into modern practice of removal of the uterus is due to Freund.

It is essential that it should be done as early as possible. The test of its practicability is the possibility of pulling the uterus down to the vulva. If this cannot be done, either the cancer has extended beyond the uterus, or the uterus is adherent. Adhesions, even if not cancerous, add greatly to the difficulty and therefore danger of the operation.

The operation of vaginal hysterectomy has been described in Chapter XXVI. Three points of difference, from the operative point of view, between cancer of the body and that of the cervix may be pointed out. First, the larger the uterus the more difficult is the vaginal operation. In a case such as Matthews Duncan's, figured at p. 404, the method of abdominal "pan-hysterectomy," which I shall describe in a subsequent chapter, would be more suitable. Second, recurrence takes place less often than after removal of cancer of the cervix. If it be true that cancer is due to a protozoon, this is explained; for cancer of the body can be removed, and doubtless is often removed, without soiling the operation wound with cancerous tissue or juice. Third, the uterus should not be split up the front as in Doyen's method of vaginal hysterectomy, for if this is done the danger of accidentally inoculating cancer tissue upon a cut surface is increased. The uterus must be removed entire, and the first step in the operation should be to sew up the cervix, the more surely to prevent such inoculation.

SARCOMA OF THE UTERUS.

Sarcoma differs from cancer in that it is a growth which springs from connective tissue, while cancer springs from epithelium. Two forms of sarcoma occur in the uterus—the circumscribed and the diffuse.* A *circumscribed* sarcoma is in its early stages very like a fibroid; and before the introduction by Virchow of the term "sarcoma," these tumours used to be called "fibro-plastic" tumours and "recurrent fibroids" (Fig. 141). The diagnosis can only be made by the microscope. There are certain characters in which they differ from fibroids, but the differences are only those of degree. They are more vascular than fibroids and

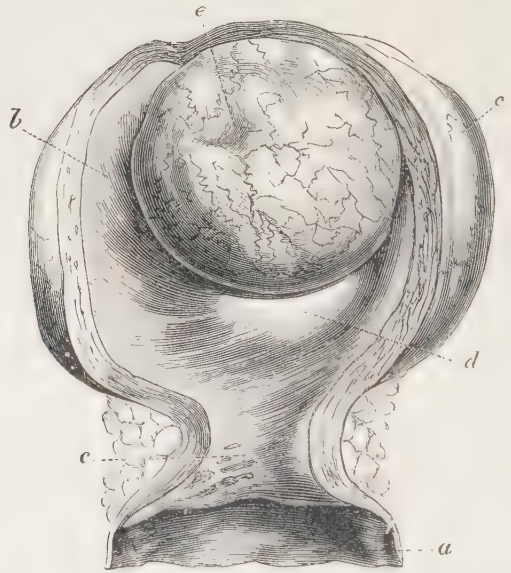


Fig. 141.—"Erectile tumour" (probably sarcoma) of uterus, half size. (*R. Barnes, after Carswell.*)

a, vagina; *b*, enlarged uterine cavity; *c*, a fibroid in the uterine wall; *d*, endometrium over fibroid; *e*, the "erectile tumour," probably sarcoma.

therefore a brighter red in colour. They are softer and more friable than most fibroids and they seldom get a stalk and become polypoid. They seldom have a capsule. They sooner

* *See* Whitridge Williams, *American Journal of Obstetrics*, June, 1894; and Roger Williams, op. cit.

break down and either ulcerate on the surface, or else cavities containing fluid and *débris* form in their interior.

The *diffuse* form cannot be distinguished from cancer without the microscope. The uterine cavity is lined with outgrowths easily breaking down. We know not whether there is any difference in the beginning between the different forms. The diffuse form may begin as a circumscribed growth which breaks down early, before the patient is examined; or, as some think, the essential difference may be that the diffuse form begins in the mucous membrane, while the circumscribed form grows from the muscular tissue. The point can only be settled by the examination of earlier growths than anyone has yet had the good fortune to obtain.

On microscopic examination, the fibro-muscular stroma of the uterus, at the edge of the growth, is seen to be penetrated, and in the middle of the growth replaced by masses of round or fusiform cells; but there is no trace of gland tissue, as in cancer, nor are these follicles filled with epithelial cells, nor in the middle of the growth is there any fibrous stroma.

Etiology. — We know nothing about the causes of sarcoma, except that it seems as if sterile marriage favoured new growth, and that, on an average, patients with sarcoma are rather older than those with cancer, and a good deal older than those beginning to suffer from symptoms dependent on fibroids. But there are so many exceptions to this generalisation that we cannot let the age of the patient influence diagnosis. A case has been seen in a girl of thirteen. The fact has, however, this importance—that if you meet with what appears to be a fibroid, causing symptoms for the first time late in life, and growing fast, you should suspect it of being sarcomatous; remove it, or a piece of it if you cannot remove the whole and examine it microscopically. *

Symptoms.—The symptoms of a sarcoma resemble those of a fibroid and also those of cancer. There is hæmorrhage, and leucorrhœa in the intervals of hæmorrhage. The leucorrhœa is watery, blood-stained fluid. There is pain, because the rapidly growing tumour stretches the uterus, and because the presence of new growths in the uterine

* Zweifel, "Cent. für Gyn.," 1884, S. 401.

cavity causes uterine colic. There is wasting, but patients with sarcoma do not usually waste so fast as those with cancer. There may be a huge mass of sarcoma without much deterioration of health.

Treatment.—If you follow the rule that when there is hæmorrhage you should dilate the cervix and then explore the inside of the uterus, you will then find in the diffuse form the ragged, uneven inner surface of the cavity, with thickening of the walls. This form cannot be distinguished from cancer, and the distinction is clinically unimportant, for the treatment is in both cases the same—to remove the uterus, if possible.

In the circumscribed form you may find projecting into the uterus a tumour, not by the touch distinguishable from a fibroid. If it can be removed, this should be done in the manner I shall describe when speaking of that disease. When removed and cut in half, the tumour will not show the glistening white fibrous tissue of an ordinary fibrous polyp. If it look at all different at any place from an ordinary fibroid, it should be examined microscopically, care being taken that if there are any suspicious parts, the sections are cut from these. If the microscope shows reason for thinking the growth sarcomatous, the uterus should be removed. There is no doubt that an ordinary fibroid, at first innocent, may undergo sarcomatous degeneration. This is a reason for examining any part that differs from the ordinary appearance of a uterine fibroid. Some think that sarcomata always arise in this way.* Cases have been described in which growths in the uterus presented the characters of sarcoma and cancer mixed. Such cases cannot clinically be distinguished from cancer, and if they could the treatment would be the same. The difference between them and ordinary cancer is only one of histological interest, not at present of practical importance.

Recurrence.—When sarcomatous tumours have been removed, the growth generally recurs: indeed, one may say always, for when it has not recurred the diagnosis was probably erroneous. In recorded cases the total duration of the disease has varied from four months to ten years, the

* *See* Pozzi, p. 439.

average being about three years. The time of recurrence after operation varies from a month to a couple of years. In cases of very early recurrence, the probability is that the growth was not completely removed. Secondary growths occur in other organs, but not so frequently in sarcoma as in cancer, and not so frequently in the circumscribed form, or fibro-sarcoma, as in the diffuse form.

Tuberculosis of the uterus.—This disease needs mention here, because it has produced symptoms and physical signs something like those of cancer of the uterus, viz. discharge, hæmorrhage, wasting, with enlargement of the uterus, expansion of its cavity, and roughening of its interior (Fig. 142). But I have never seen a case in which these signs or symptoms produced by tuberculosis led to the suspicion of cancer. So far as my experience goes, such advanced tuberculosis of the uterus has been always associated with tubercular disease elsewhere—of the Fallopian tubes, peritoneum, and often of the lungs. Hence, when seen, the uterus has been fixed, there have been lumps beside and behind it, and the patient has been cachectic. Operative removal of the diseased pelvic organs has been plainly useless as well as dangerous; and even dilatation of the cervical canal (for more exact diagnosis) has been rejected because it was not thought that the information so obtained would be of use in the treatment of the patient. The reason why diagnosis is made so late is that the disease, in its early stages, causes no symptoms.

Morbid anatomy.—Two stages of this disease have been seen. First, the endometrium is studded with miliary tubercles. When these are numerous and have long been present, they break down and there is ulceration. Second, the cavity is lined with cheesy matter, and may be filled with cheesy pus (Fig. 142). The cervix may get blocked, and thus pyometra result. The ordinary form of tuberculosis of the uterus—that which is secondary to tuberculosis elsewhere—affects the body of the uterus only, not the cervix. In a few rare cases primary tuberculosis of the cervix alone has been observed, occurring in the form of miliary tubercles, with or without ulceration. This has been taken for cancer. Whitridge Williams thinks that there is a fibroid form of tubercular

disease, on the ground that it occurs in the tubes; but it has not yet been observed.

Diagnosis.—The diagnosis is to be made by finding tubercle bacilli in the discharge. For details, consult works on bacteriology.

Treatment.—If primary tubercular disease of the uterus

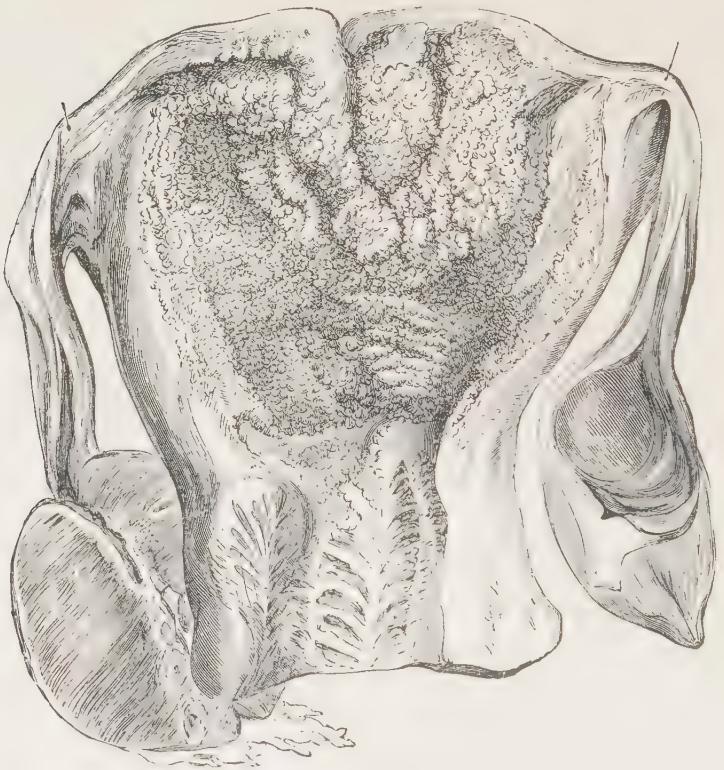


Fig. 142.—Tuberculosis of the uterus. (*From a specimen, No.* 2,261[75], *in the Museum, Guy's Hospital.*) (*After R. Barnes.*)

The uterus full of soft cheesy matter; its internal surface irregular and granular, and devoid of mucous membrane; its cervix unaffected. The Fallopian tubes were filled with, and surrounded by, masses of tubercular matter.

is found out (as might be done by examination of the discharge) before the disease has infected any other part of the body than the uterus and Fallopian tubes, the only treatment is to remove the uterus and Fallopian tubes. As yet this has not been done often enough to justify any

broad statement as to the result. According to Dr. Whitridge Williams,* the results have been "encouraging," but a more definite statement than this cannot be made until more cases have been observed, and cases have been watched for a longer period after operation.

* "Clinical Gynæcology," by American authors; Art. "Genital Tuberculosis."

CHAPTER XXVIII.

BLEEDING FIBROIDS.

Hæmorrhage from fibroids.—In this chapter I consider cases that present the following features:—(1) Hæmorrhage has made the patient anæmic; (2) the cervix uteri is healthy; (3) the body of the uterus is enlarged; (4) the lining membrane of the uterine body is smooth, and not friable. The usual cause of this combination of signs and symptoms is the growth of fibroid tumours in the body of the uterus. What I shall say about their morbid anatomy in this chapter applies to all fibroids; but I shall speak here of the diagnosis and treatment of submucous fibroids only.

Nomenclature.—The full name of these growths should be "fibro-myomata." This term expresses that they contain fibrous and muscular tissue. In different tumours the proportion of these tissues varies; some tumours contain much fibrous and little muscular tissue; others much muscular and little fibrous tissue. The former have been called "fibromata," the latter "myomata." Greek words give an appearance of scientific accuracy, which is in this instance not real, for the so-called fibromata contain a little muscular tissue, and the so-called myomata contain some fibrous tissue. It is not possible in the uterus clinically to draw a sharp line between fibromata and myomata. The term "*fibroid*" is short, convenient, sanctioned by years of colloquial usage, and is not pathologically inaccurate.

Frequency.—These are the commonest tumours that women are subject to. It has been estimated that new growths, taking them all together, are about three times commoner in women than in men. Of the new growths which occur in women, about one-fourth are in the womb. Bayle found that in a hundred autopsies of women over thirty-five, fibroids were present in twenty. Klob estimated that they occur in 40 per cent. of women over fifty.

In most women who suffer from them fibroids cause no trouble, and are only found out accidentally. Haultain* found that they accounted for about 8 per cent. of the patients in the gynæcological wards of the Edinburgh Royal Infirmary. Examining my out-patient records, I find that fibroids were diagnosed in about 3 per cent. of the cases. It must be remembered that both in- and out-patients of gynæcological departments contain many patients of ages at which fibroids are rare. But among my out-patients 40 per cent. were over thirty-five, so that the proportion of women over thirty-five seeking advice for fibroids would be about 7½ per cent., only a fraction of the frequency of fibroids in women over thirty-five ascertained by *post-mortem* examination.

This fact is important, because lately some have urged that every fibroid should be removed, whether it be causing trouble or not; for that if it be not causing trouble when discovered, it will at some future time do so. But the figures I have given show that the probability is the other way. Therefore advise not interference with a fibroid merely because it exists; advise it only if there are symptoms undoubtedly caused by the fibroid and undoubtedly injuring health, or if the situation of the fibroid is such that it is almost certain to become a source of danger.

Etiology.—We know nothing as to the causes of fibroids. They occur chiefly between thirty-five and forty-five. They are rare before twenty-five. They have been attributed to celibacy, to marriage, to sterility, and to excessive sexual excitement. The facts bearing on this question have been well analysed by Haultain. He comes to the conclusion that neither marriage nor pregnancy has any influence on the origin of fibroids, but that marriage favours their growth and that they tend to prevent pregnancy. But these conclusions, although true as to what the influence of fibroids is, are not proved by such a preponderance of numbers as to show that the influence of the sexual function upon fibroids, or of fibroids upon fertility, is great.

Classification.—Fibroids were divided by Virchow into *hard* and *soft*. Other names are the white and the red

* Allbutt and Playfair, "System of Gynæcology."

The *hard* fibroids are the commoner. They are harder than the other kind, and whiter on section. Their interior contains few vessels; they get their blood supply from vessels which surround them, and which run in the cellular tissue dividing the tumour from the uterine substance proper. They lie in a distinct cavity, out of which they can be shelled. When they form large tumours, these are formed by an agglomeration of smaller ones. Hence they have been called *nodular*. They consist mostly of fibrous tissue, and contain but little muscular fibre. They seldom grow after the menopause.

The *soft* fibroids are less common. They are softer, looser in texture, and redder on section. Fairbairn* has shown that the red or soft fibroids are fibroids that have undergone a "necro-biotic" change something like that which a macerated fœtus has undergone *in utero*. The red colour is due to the breaking up of red blood corpuscles and diffusion of the pigment. The tissue cells have lost their capacity for taking nuclear stains. From œdema there is often increase in size. The necro-biotic change begins in the centre of the tumour. Sometimes it goes on to breaking down, and thus cystic cavities are formed. This change occurs in from 5 to 7 per cent. of fibroids. It is not peculiar to any age. It appears to be favoured by pregnancy; but we know nothing of any other causal factor. Severe pain has been in these cases the most frequent indication for operation; but it is not present in all, and there has been tenderness only in a few.

The hard nodular fibroids are all, from a clinical point of view, alike in their beginning. When they get large enough to give trouble, they fall into two classes, which produce different symptoms, involve different risks, and require different treatment. These two classes are called the subperitoneal and the submucous.

Classification according to seat.—A fibroid begins to grow in the muscular wall of the uterus. As it gets bigger it presses asunder the muscular fibres on each side of it, and makes the uterine wall project. It does this in the direction of least resistance, so that it projects on the peri-

* "Journal of Obstetrics and Gynæcology of the British Empire," 1903, vol. ii.

toneal surface or into the uterine cavity, according to whether it began nearer the peritoneal or the mucous surface. In the former case it is called a *subperitoneal* tumour, in the latter a *submucous* one (Fig. 143). The nearer to either surface the fibroid takes origin, the sooner will it project. If it begins in the middle of the uterine wall, so that it gets large before it comes to project much in either direction, it is called *inter-*

Fig. 143.—Submucous fibroid. (*From a specimen in the Museum, Royal College of Surgeons.*) (*After R. Barnes.*)
Note the thinness of the uterine wall where the tumour is attached.

stitial. Sharp definition is impossible. We cannot define when a tumour ceases to be interstitial and becomes subperitoneal or submucous. The same tumour may project in both directions. I speak in this chapter of *bleeding* fibroids, whether interstitial or submucous.

Condition of the uterus with fibroids.—When the uterus is greatly enlarged, without distinct bosses on its peritoneal aspect, it is generally either from a soft fibroid, a fibrocystic tumour, or multiple hard fibroids. Multiple fibroids (according to Gusserow,* but I know not on what evidence

* "Deutsche Chirurgie," Billroth and Lücke, Lief. 57.

his statement is based) are commonest in the posterior wall and fundus of the uterus, less common in the anterior wall, least common at the sides. When numerous, and in a young subject, the uterine wall is thickened. Its muscular fibres are enlarged as in pregnancy, but to a less degree. The muscular fibres of multiple fibroids are also larger than those of the unimpregnated uterus. Hence a French writer has happily spoken of "fibroid pregnancy," as others have done of the

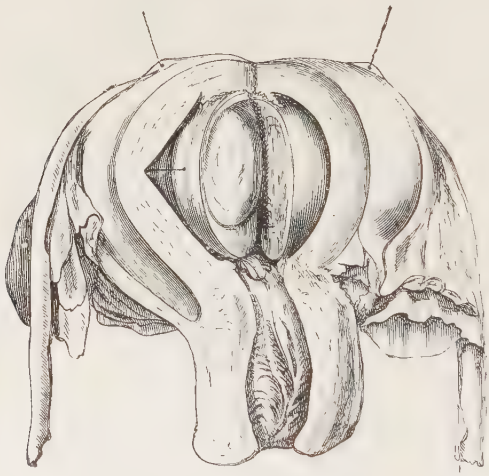


Fig. 144.—Uterus, with two large fibroids; one subserous, at the back, not seen in this view; one submucous, projecting into the uterine cavity; half size. (*From a specimen, xiv.* 10, *in the Museum of St. George's Hospital.*) (*After R. Barnes.*)

delivery of a fibroid. The tumours themselves are poor in vessels, but the tissue around them is vascular, and often they are surrounded with venous plexuses. In older patients the uterine wall is sometimes atrophied. We cannot define more closely than this upon what the condition of the uterine wall depends.

The uterine cavity is lengthened, and sometimes its direction is made bent, or even, when submucous growths are also present, tortuous (Figs. 144, 145). The latter condition makes it impossible correctly to measure the length of the uterine cavity with the sound. The uterine appendages are often displaced by irregular enlargement of the uterus from

interstitial tumours (Fig. 146). This is a fact important to remember in advising treatment. Interstitial fibroids which enlarge the uterine cavity cause hæmorrhage because there is a larger surface to bleed each month and because they attract blood to the uterus.

When a fibroid projects into the uterine cavity the en-

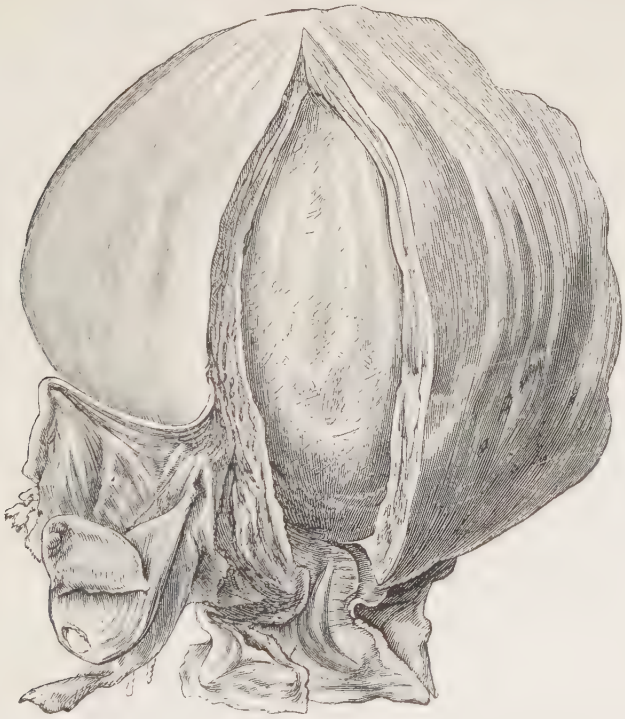


Fig. 145.—Submucous fibroid, causing great enlargement of the uterus and uterine cavity; three-eighths natural size. *From a specimen, G G 29, in the Museum, St. Thomas's Hospital.* (*After R. Barnes.*)

dometrium becomes hypertrophied. This has been called "endometritis," but there is no evidence of inflammation; the change is simply an overgrowth of glands, vessels, and interglandular stroma. The changes which such a hypertrophied endometrium undergoes during the menstrual cycle have not yet been studied. The endometrium with fibroids may undergo other changes secondary to changes in the fibroid

itself. It may become atrophied from pressure; this is frequent in submucous tumours. It may become inflamed. The various conditions on which changes in the endometrium depend have not yet been reduced to law.*

The growth of fibroids.—We know not why fibroids grow, nor why they stop growing. We know that most fibroids reach a certain size and then cease to grow, but we know not what regulates the size at which they stop growing. We only find out fibroids when some trouble, in most cases caused by the fibroid, leads the patient to let herself be examined. In such we know not how long the fibroid has taken in reaching the size at which we find it. Fibroids grow slowly; it is believed the more slowly the more they are composed of fibrous tissues, and the less of muscular tissue. This is theory; it has not been proved, but it is what we should expect.

Fig. 146.—Uterine fibroid, showing altered relation of appendages. (*After Doran.*)

Fibroids vary in their rate of growth. They enlarge greatly during pregnancy, but this is because they share the growth of their mother tissue the uterus, for they involute along with it. Sudden increase in the size of fibroids is sometimes observed, due to haemorrhage into them or to œdema. On the other hand, the opposite effect, shrinking, has been observed as a result of the drain of fluid from the blood in cholera.

It is generally believed that fibroids delay the menopause. From clinical experience I think the belief is correct, although I know of no exact proof of it. They only delay it by a few years. After the menopause hard fibroids, as a rule, cease to grow, and get a little smaller. Fibroids may undergo necrobiotic change after the menopause as well as before it. Most fibroids stop growing when they are small. Some grow fast

* *See* Semb, "Arch. für Gyn.," Band xliii., for a summary of the literature and original observations.

and long, and come to be among the biggest tumours seen in the body. Richter* relates a case in which a fibroid in a girl of twenty-three grew in two years and a half so large that the girth of the belly was 1·62 metre, or sixty-five inches. A fibroid has been observed weighing 140 lb.

The changes in fibroids during menstruation.—These changes have been observed by Sir J. Williams.† They affect not only the fibroid but also the uterine wall. There is monthly enlargement and monthly shrinking of the whole organ in all its dimensions. The changes are those which accompany the menstruation of a healthy uterus, but because the uterus is bigger the variation in size is exaggerated. The uterus and tumour begin to enlarge immediately after menstruation has ceased, and go on getting bigger until a few hours before menstruation begins. Then decrease begins and takes place rapidly during the first days of the flow. The amount of shrinking bears no relation to the amount of blood lost. The increase in size is due to the growth of the menstrual decidua and to the afflux of blood to the uterus which that growth attracts. When the growth of the decidua is complete, the uterus contracts and squeezes the blood out of itself (and the tumour which forms part of it) into the vessels of the broad ligament and the decidua, and hence the uterus gets smaller. The decidua becomes congested, and at length its overloaded vessels give way and blood escapes into the uterus. Later, blood appears at the vulva, and the patient becomes aware that menstruation has begun. These changes do not take place in all fibroids. In subperitoneal fibroids that cause no bleeding no change is observed. In small fibroids that do not rise high above the pelvic brim, they are so slight that it is impossible for an observer to feel confident about them. These changes may sometimes be of diagnostic value, for they do not occur in anything but the unimpregnated uterus. They are of physiological interest, for they throw light on the changes of menstruation.

Natural cure of fibroids.—(1) **Absorption.**—Many cases described as instances of fibroids cured by absorption were probably only cases in which the diagnosis was wrong. But

* Quoted by Gusserow, op. cit.

† *Lancet*, vol. i., 1880.

some have been reported in which there can be no doubt. Doran has brought together, classified, and criticised the evidence bearing on the question.* We know not why absorption takes place; we cannot foretell it; and it is so rare that we cannot count upon its occurrence.

(2) **Expulsion.**—The tumour may be expelled into the uterine cavity, then through the cervix into the vagina, so that it comes to hang by a stalk, and is called a polypus. I have described this in Chapter XXIII. Cure may be naturally accomplished by the separation of the stalk and expulsion of the tumour, but it is usually, in civilised countries, completed by the surgeon, for if left to nature, the patient will have years of ill-health, and may die during the process.

(3) **Disintegration and gangrene.**—When tents are used to dilate the uterine canal, and a tumour so projects into the uterine cavity as to be pressed on by the tents, the pressure will sometimes produce local gangrene of the part of the fibroid which was pressed upon. Such gangrene is local and superficial; a little offensive discharge may result, but the slough is soon cast off, and the patient's condition is little altered by it.

Fibroids sometimes spontaneously disintegrate and are expelled. In some cases this occurs after removal of the ovaries, but it also occurs without it. It is believed that it depends upon some change in the capsule, by which the blood supply of the tumour is cut off. Then, it is supposed, ulceration takes place over the most prominent part of the tumour, making it bare, followed by dissecting suppuration, which frees the tumour from its capsule. The tumour thus deprived of blood dies and disintegrates. This sequence of events, although probable, is theoretical; it has never been observed.

A disintegrated fibroid presents at the os uteri not as a round, smooth body, but as a tangle of fibrous bands, and it is expelled as detached shreds of fibrous tissue. While the breaking-down tumour is in the uterus, putrefactive germs do not get to it (unless carried up by some outside agency), and therefore the tumour does not putrefy. Hence there is neither fever nor stinking discharge. But when

* "Obst. Trans.," vol. xxxv. *See* also a case reported by W. Duncan in discussion on Doran's paper.

it gets into the vagina, or if it be meddled with while inside the womb, the dead tissue becomes putrid and stinks, the discharge becomes offensive and the patient feverish, from sapræmia. Hæmorrhage accompanies the process from the beginning (and there will usually be a long antecedent history of hæmorrhages). Then shreds begin to come away. The process usually lasts from one to two weeks. If the tumour is so small that its expulsion is completed soon after it has got down into the vagina, the patient gets well, and is cured of her tumour. But if the tumour is a big one, and is long coming away, the patient may die (1) exhausted by discharge and bleeding: (2) poisoned by the putridity of the tumour, *i.e.* from sapræmia: or (3) purulent endometritis may be set up, which may spread along the Fallopian tubes to the peritoneum,* and kill some weeks afterwards.

The treatment when this happens is to hasten the process by cutting away the dead tissue as completely as possible with scissors, and to prevent sapræmia by washing the passage with an antiseptic solution twice a day, or as much oftener as may be necessary to prevent the discharge from becoming offensive.

A disintegrated fibroid may be taken for placenta.—The shreddy, fibrous tissue formed by a disintegrated fibroid feels very much like placenta. If you are called to a patient who has a large uterus, and you feel this tangle of fibres presenting at the os uteri, the idea of placenta prævia may occur to you. I once saw a case of this kind, occurring in an unmarried woman, in whom the diagnosis of placenta prævia had been made, and the patient taxed with pregnancy. To avoid this error, notice the absence of the softening of the cervix, and the violet discoloration of the vulva, which are characteristic of pregnancy; put your finger through the os, and you will come upon no fœtus. There will be no breast signs of pregnancy, and there will be a history of frequently repeated bleedings for a long time back.

(4) **Sloughing, without disintegration.**—Fibroids sometimes die in a lump, without breaking up. This must depend on a change in the capsule of the tumour by which its blood supply is cut off. How and why this happens we know

* *See* a case reported by Hurry, "St. Barth. Hosp. Rep.," vol. xx.

not. When a fibroid has thus died in a mass, suppuration round it opens a path for its exit, and the uterus squeezes it out. It may force it into the vagina, where it is found as a loose, solid, stinking lump. Matthews Duncan* has reported such a case. The symptoms and effects of the expulsion of a dead fibroid entire are the same as those which attend that of a broken-down fibroid, the only difference being that there is a decomposing lump instead of decomposing shreds. If the dead fibroid is cast off into the peritoneum, peritonitis first shuts off the tumour by adhesion from the general peritoneal cavity, and then by suppuration round the tumour the tissues which separate it from the surface are melted down; and if the patient survive, and is not helped surgically, the tumour is expelled through the belly wall. I have removed such a fibroid from the peritoneal cavity.† Neugebauer has reported a case‡ in which he assisted the expulsion, begun by nature, of a fibroid through the belly wall.

The only treatment is to remove the dead lump. If this is lying in the vagina, its removal is easy. Should it be in the uterine cavity, the treatment is to dilate the cervix until its canal is big enough to admit the finger and an instrument, and then cut the lump up and remove it in bits. If the dead lump is in the peritoneal cavity, it will be discovered and removed only by acting on the rule not to tap or aspirate a tumour of doubtful nature; but if the symptoms are serious enough to demand interference, make an incision big enough to admit the finger and explore. If an opening in the belly wall has already formed, the obvious course is to pull the lump out, cutting it up if necessary.

(5) **Fibroids and cancer**.—The relation between fibroids and cancer has been carefully studied by Piquand.§ There is no clear evidence that fibroids make those who possess them more liable to cancer. But cancer may invade fibroids. (*a*) Cancer beginning in the epithelium either of the cervix or body of the uterus may spread into a fibroid. (*b*) Islands of cancer may grow in the middle of a fibroid. Generally these are

* *Medical Times and Gazette*, July 6th, 1872.

† *Lancet*, Dec. 8th, 1894.

‡ "Monat. für Geb.," Dec., 1866.

§ "Annales de Gynécologie et d'Obstet.," 1905.

secondary to growths elsewhere; but some have been recorded in which at least the primary growth was not discovered.

Treatment of bleeding fibroids.—(1) **Drug treatment.** Drug treatment comes first, because it is not attended with danger or suffering. The only drug which certainly has power over bleeding fibroids is ergot. It acts by causing contraction of smooth muscular fibres. It makes the uterus contract, and so squeezes the vessels and the tumour. It also makes the vessels contract. Some think it may squeeze the tumour so much as to get it absorbed. I have seen it lessen the size of the tumour. This effect was first pointed out by Gairdner, of Glasgow, in 1864.* The effect of ergot in checking uterine hæmorrhage has long been known, but the beneficial effect of its prolonged and continuous administration in bleeding fibroids was first brought to the notice of the profession in 1872 † by Hildebrandt. To get the full effect from it, the drug must be given continuously for months. Hildebrandt gave it by hypodermic injection. But this method is disagreeable to the patient, because every preparation of ergot produces inflamed nodules where it is injected. Equal benefit follows when the drug is given by the mouth. The best form is the liq. ergotæ ammoniatæ, a preparation in which ergot is exhausted by ammoniated proof spirit. Order this in doses of half a fluid drachm three times a day. Pills of three grains of ergotin are more convenient.

Taking all cases of bleeding fibroids together, those in which bleeding is slight as well as those in which it is great, I find that ergot will check the hæmorrhage in three cases out of four. If the drug is thus effective, it may be taken for from six months to two or three years. I have never seen any bad effects from this prolonged administration. If there be no appreciable effect, the drug must be left off after a length of trial dependent on the amount of the bleeding; the more the bleeding, the less the time that you can spend in trying the effect of drug treatment. Hydrastis Canadensis is said to be useful. I have seen lessened hæmorrhage follow

* *Glasgow Med. Journal*, vol. xii.

† For a collection of evidence bearing on this subject *see* papers by the author, *Medical Times and Gazette*, 1879.

its use so seldom that I am not sure that when it did follow it was more than coincidence.

What proportion of fibroids require operation?—I have shown above that the number of women with uterine fibroids who come for treatment is only about a third of those who have fibroids. As in three out of four of those whose fibroids cause bleeding this bleeding can be reduced by ergot to an amount compatible with health, it follows that of bleeding fibroids not more than about one out of twelve requires operation.

(2) **Removal of tumour.** If ergot fails, the question comes, Can the tumour be removed? This depends upon its size and position. (*a*) It may be presenting at the external os, thinning and stretching the lower segment over it, just as this is thinned and stretched during labour. If so, enlarge the os externum by dividing its margin bilaterally with scissors, and give ergot, so as to hasten the expulsion of the tumour into the vagina, when you can treat it as a polypus. If the patient be so anæmic that you think it unsafe to wait for this, then remove the tumour in the way I shall describe in the next paragraph.

(*b*) The tumour has not descended into the cervical canal. The removal of the tumour is the ideal method, for if this is done the patient is cured without the loss of any function. If the tumour is so small that you can pull it undiminished through the cervical canal, *avulsion* is the way to remove it. Seize the tumour with strong forceps, and then rotate them so as to break away the tumour from the uterus. If the tumour projects so far into the uterine cavity that its equator is free—that is, it has a neck—it can generally be removed, and this ought to be done. But you must consider not only what may be done, but what can be done with the least risk. The safe removal of larger tumours within the uterine cavity depends upon three things. (i.) Great dilatation of the cervical canal. This must be large enough to allow free movement within it of the finger and an instrument—that is, it must admit two fingers. To attain sufficient dilatation of the cervical canal, the best way is to protract the process over several days, so that you may get several tents in at once. (ii.) Cutting up the tumour into little bits. (iii.) Antiseptics.

There are two conditions which limit the possibility of safely removing through the cervical canal an intra-uterine fibroid. (1) The uterus must not be so large that it seems unlikely that, even after the tumour has been removed, or greatly diminished in size, you can get your finger to the top of it. If the tumour be not larger than a fœtal head, as you cut away the lower part, you can by the abdomen press the top of the uterus down within reach of the vaginal

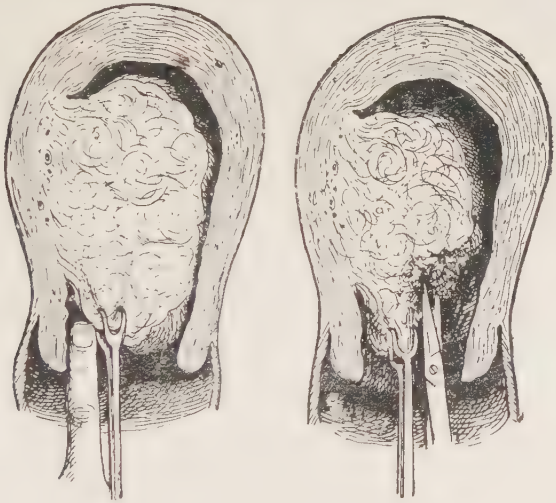


Fig. 147. Fig. 148.

Illustrating enucleation of submucous fibroid. Fig. 147, seizure of tumour with volsella, guided by finger. Fig. 148, cutting off bit seized by volsella.

finger. If the tumour be much larger than this, you cannot be sure of doing this, nor can you be sure that there may not be other tumours in the wall of the uterus. (2) You must be able to distinguish between the tumour and the uterine wall. As a rule, if the greater part of the tumour is within the uterine wall, not in the cavity, the definition of its outline will be difficult, and you cannot be sure of doing this. Sometimes, although the equator of the tumour is not free, you can, by cutting with scissors where the lower edge of the tumour emerges from the uterine wall, hit the capsule, and then with your finger so enucleate the lower part of the tumour that it comes to have a neck, and you can safely proceed to cut it up and remove it. I have made exact statements as to size

and degree of projection, for the sake of clearness; but I do not lay them down as Procrustean rules to be applied to every case. Judgment must depend upon the combination of conditions in each case: the size and position of the tumour, the size of the uterus, the size of the cervical canal, and your own experience and skill in vaginal manipulations. Do not attempt the operation unless you think you can finish it, for an incomplete operation will bring danger.

The operation is simple, but is tedious and tiring. Seize the nearest part of the tumour with a volsella, and then with scissors cut out as large a piece as you can around the grip of the volsella (Figs. 147, 148). Having removed this, seize another bit, and cut that away, and so on, until you have removed the whole. You may also get away pieces by avulsion: seize a piece with broad-bladed forceps, and twist it off. By repeated operations of cutting and tearing you can get the whole tumour away. Rinse fingers and instruments in an antiseptic solution before each time that you put them in the uterus, and during the operation frequently wash out the uterus with an antiseptic solution.

(3) **Abdominal section**. If the bleeding is impairing the patient's health, if ergot has failed, and if you find that the conditions necessary for safe enucleation are not present, an abdominal operation is indicated. The choice of operation depends upon conditions which cannot be found out until the belly has been opened. One of four things may be done: (1) removal of the ovaries and tubes; (2) removal of the uterine body without the ovaries; (3) removal of the uterus with the ovaries and the tubes; (4) myomectomy. I postpone the description of these operations until I come to speak of subperitoneal fibroids. Here I shall only state their advantages and disadvantages.

(1) When the ovaries and tubes have been removed, uterine fibroids shrink and bleeding stops. The advantage of this operation is that with small non-adherent tumours it is safe. Its disadvantages are (*a*) that if the tumour is large, the ovaries may be so displaced that it is difficult to find them, and (*b*) the folds of the broad ligaments may be so separated that it is difficult to get a good pedicle. Either of these conditions may make oöphorectomy more dangerous

than hysterectomy. (*c*) The removal of the ovaries brings about a premature climacteric, followed within a few years by loss of sexual feeling, atrophy and contraction of the vagina. If the patient be young, this may be an important disadvantage. (*d*) In a few cases oöphorectomy fails. Fibroids may go on growing in spite of it. In one case under my care, after dwindling of the tumour and cessation of bleeding, sarcomatous growth developed in the uterus. Nervous disturbances have been reported as following oöphorectomy, but we have not yet much knowledge concerning them. Neurasthenia often follows an operation, and insanity may; we know not whether they are more frequent after oöphorectomy than after other operations of equal gravity. But the objections I have detailed, and the safety of hysterectomy, have caused oöphorectomy for fibroids to be given up, unless it be for cases in which exceptional conditions make hysterectomy unusually difficult and dangerous.

(2) In the case of tumours of the uterine body, when the cervix is free, it is easy and safe to remove the body of the uterus and leave the ovaries behind. If this be done, the sexual function is not impaired, but the ovaries may become the seat of cystic disease.

(3) The uterus may be removed with the ovaries and tubes. It may either be cut off, leaving the cervix behind, or removed along with the cervix. The terms in current use are, for the former operation, "hysterectomy"; for the latter, "pan-hysterectomy." The correct terms are, for the former, "amputation of the uterine body"; for the latter, "hysterectomy." Which of these two operations is the better is a question solely for the operator, to be decided on the operating table. The result of either of these operations is more satisfactory than that of oöphorectomy. Amputation of the uterine body is safer than hysterectomy.

Another operation has also been practised, known as Martin's. It is cutting open the body of the uterus, enucleating the tumour, and then sewing up the wound in the uterus. This operation is more dangerous than either of those just described. I therefore advise it not.

From the patient's point of view two things have to be considered: the risk to life and the after-consequences. With

regard to the former, she must trust the operator to do what is safest. With regard to the latter, if the patient be young, the consequences of removal of the ovaries should be, through her husband, or a married female relative, explained to her; and if she wish the ovaries left, the operator should respect her wish if he can with safety to her life do so. But he should always reserve to himself a discretion, for the decision depends on conditions which cannot be completely known until the belly has been opened.

(4) **Applications to the endometrium.**—The endometrium bleeds, not the tumour. Hence if you wash out the uterus with a styptic, or scrape away the endometrium and then destroy by caustic what has escaped scraping, bleeding is for a time stopped. The patient may have two or three months' freedom from excessive hæmorrhage, but when the endometrium has been reproduced, bleeding returns. Hence this is only a palliative, not a cure. Advise it only in exceptional cases; such as when the patient refuses radical treatment, when circumstances make her wish to postpone it, or when some accompanying condition contra-indicates an operation. Thus in the case of a very fat woman with a dilated heart, who was therefore a bad subject for operation, but had a large bleeding fibroid, I checked hæmorrhage by washing out the uterus with tincture of hamamelis.

Electrical treatment.—Another kind of intra-uterine treatment has been introduced—viz. by electricity. This is known as the Apostoli treatment, from the name of the French surgeon who systematised it, and induced others to take it up. The essential feature of Apostoli's method is that one pole of a battery is put in the uterus, and the other connected with a very broad pad on the abdominal wall. Owing to the size of the pad, a very strong current can be used, because the large pad so diffuses it that it does not burn the skin. It is said that this strong current produces an "electrolytic" action by which the absorption of the tumour may be brought about. There is no evidence of any such action. In Great Britain the chief advocate of this treatment was the late Thomas Keith,* and his book is the

* "Electricity in the Treatment of Uterine Tumours," by Thos. Keith and Skene Keith, 1889.

best account we have of its effects. This work has been critically examined by Stuart Nairne.* I cannot quote in detail, but the broad result of Nairne's analysis of the cases is this. Out of 106 cases, the result was good in 28, indifferent in 13, bad in 21, very bad in 44. Cases in which it has been supposed by advocates of electricity that the tumour was absorbed are very few in proportion to the number treated, and in most of them the diagnosis was probably wrong—either they were hæmatoceles, or inflammatory swellings, or the supposed tumours were so small that it is doubtful if there was any tumour. The only indubitable effect of electricity is that where the intra-uterine pole touches the endometrium the tissues are cooked, just as a piece of meat is cooked when it is held before the fire. This cooking may make the endometrium for a time bleed less. It may also set up inflammation. But the instruments required are costly, the applications are disagreeable and, according to those who make them, require frequent repetition, hence this treatment is protracted and expensive. Dilatation of the cervix and a single application of an ordinary caustic are much better. The general results from electrical treatment as applied to all cases are far inferior to those of ergot.

* *Provincial Med. and Surg. Journal*, 1891.

See B. M. A. meeting - paper by Strauss Frankfurt. - Lancet. Aug 22. 1914.

Part VI.

LEUCORRHŒA.

CHAPTER XXIX.

GENERAL CONSIDERATIONS AS TO LEUCORRHŒA.

What is leucorrhœa?—Leucorrhœa is the Greek equivalent of the term "whites." It commonly means a discharge from the vulva which is not blood. A closer description than this cannot be given, because, first, the diagnosis of the kind of the discharge in most cases has to rest on the patient's description of it, which is not always accurate; and, secondly, because the kind of discharge may vary from one week to another, being sometimes white and sometimes yellow. The vulva is normally moist. A description of the normal secretions will appropriately precede that of the abnormal ones.

The normal secretions which moisten the vulva.—There are four parts from which normal secretions flow on to the vulva: (1) the body of the uterus; (2) the cervix uteri; (3) the vagina; and (4) the vulva itself.

(1) *The secretion of the body of the uterus.* This is believed to be a clear, watery, colourless fluid. We know little about it, because during life we only see it mixed with the secretion of the vagina and cervix. The characters are judged of from the fluid found in the uterus at *post-mortem* examinations. In health there is not much of it.

(2) *The secretion of the cervix uteri.* The cervix contains so many glands that it is practically a large gland. These glands secrete a clear transparent glairy fluid like white of egg. With a speculum you may see clinging about the cervix the mixed secretion of the body and cervix.

(3) *The secretion of the vagina.* In healthy virgins this looks like unboiled starch mixed with water, and can be seen

lying in the folds of the vagina. The fact that the vagina secretes at all has been denied; because some people have looked for glands and found none. But many observers have found glands, and, in such a matter, positive evidence outweighs negative. There are glands, but not many of them. The fact of vaginal secretion has been established by Gow.* The vaginal secretion is a transudation of albuminous fluid with shedding of the superficial layers of its epithelium. When poured out it is alkaline. But in the lower part of the vagina micro-organisms abound, and they make it acid.

(4) *The secretions of the vulva.* The vulva contains sebaceous and sweat glands. The secretion of the former can be seen in the folds of the vulva of women not careful to wash the part; stuff very like the sebum inside the male prepuce. There is also a sexual gland, Bartholin's gland, the secretion of which is poured out under sexual excitement.

We have no exact knowledge as to the quantities of these secretions in health, for we have no practicable way of measuring them. The secretions flow down the vagina to the vulva and there evaporate. The only definition of a pathological leucorrhœa is that it is that which makes the parts adjacent to the vulva so moist that the moisture is an annoyance to the patient.

At different periods of female life we have different kinds of leucorrhœa to deal with. It will therefore be convenient to divide the subject into four parts: I. Leucorrhœa in children. II. Leucorrhœa in virgins. III. Leucorrhœa in the married. IV. Leucorrhœa in old women.

* "Obst. Trans.," vol. xxxvi. p. 52.

CHAPTER XXX.

LEUCORRHŒA IN CHILDREN.

Leucorrhœa in children.—The chief cause of leucorrhœa in children is vulvitis; a not uncommon disease in them. The diagnosis is easy. The mother tells you the child has a discharge. Put the child on her back, separate the labia, and you will see that the mucous membrane is bright red and bathed in pus. The skin round may be red, with adherent crusts of pus.

Alleged causes.—It is produced by a micro-organism,* but we know not always its life history, nor whence it comes Among the alleged causes are: (*a*) *Dirt.* But it is met with in children of the upper classes, who are kept scrupulously clean in every other part; and many poor children who are not at all clean do not get it. (*b*) *Worms.* Many children who have worms never get vulvitis; and no one has shown that worms are more frequent in children with vulvitis than in other children. (*c*) *Struma.* We have no definition of a "strumous" child exact enough to enable this to be tested. I know of no special class of children in whom vulvitis is more frequent than in others. (*d*) "*Constitutional causes.*" We know not what these are, if they exist. If the disease were due to any constitutional cause, it ought to recur again and again, after having been cured by treatment; but it does not. (*e*) *Chill.* What disease has not been ascribed to catching cold? There is no evidence that purulent vulvitis can come from a chill. (*f*) *Gonorrhœa.* The gonococcus is the only agent that we know causes purulent vulvitis in children. Drummond Robinson † found it present in 76 per cent. of such cases. Many times innocent persons have been accused of criminal conduct to children such as to give them this disease. It is seldom that children are thus

* *See* M'Cann, "Obst. Trans.," vol. xxxviii.

† "Obst Trans," vol xli., 1899.

infected with it. It is usually conveyed by dirty towels, sponges, clothing, utensils, or fingers: possibly sometimes by accidental direct contact. Hence the mere presence of a purulent discharge from the vulva of a child is no ground for making or supporting a criminal charge. If such a charge is made, and you are asked if your examination confirms it, look for lacerations, and for spermatozoa on the clothing, and (if you are consulted early) in the vulval secretions. Base no opinion on the mere presence of pus. I hesitate even to say that the gonococcus can be identified and distinguished from other organisms with such certainty that a criminal charge might be based on its discovery. (*g*) *Masturbation.* A child with vulvitis may masturbate. The itching makes the child rub the part, and thus the habit of masturbation may be acquired. This is a reason why it should be cured. But Dr. R. Langdon-Down tells me that in idiots, who generally masturbate, vulvitis is not common. They get excoriations and sometimes bleeding, but not purulent vulvitis. Arthur Martin * states that when vulvitis is present in a child who masturbates, its duration is indefinite; and this is what we should expect. (*h*) The disease is seen in children whose circumstances would make one think gonorrhœal infection impossible, and in whom the gonococcus is not found: in such we know not its cause.

Treatment.—The diseases of children are characterised by the quickness with which they yield to proper treatment. Vulvitis can be quickly cured. The treatment is to wash away frequently the discharge and bathe the mucous surface with a sedative or astringent and antiseptic fluid. I have found a saturated solution of borax efficient. If that failed I should use a weak solution of zinc chloride: five grains to the pint. The mode of application is important. Unless instructed, the mother will simply bathe the labia with it and do no good. Tell her to use the lotion with a male syringe; to hold the labia apart and to insert the nozzle of the syringe in the vagina so that the returning fluid may wash away the discharge and bathe the whole mucous surface. This should be

* "De la Propagation des Affections Vulvo-vaginales de l'Enfance aux Organes genitales internes." Thèse, Paris, 1894. An excellent summary of the literature of the subject.

done several times a day. It will quickly cure. Do not let pads of lint or wool be put between the labia; they can do no good, because they do not reach the deeper folds, and they irritate. Mopping the vulva is a less efficient way of applying remedies than with a syringe. In most books you are told to give iron and cod-liver oil; these drugs will not cure without local treatment, and the vulvitis will get well without them if proper local treatment is used; but they will do nothing but good.

Vaginitis in children.—In the disease just described the inflammation may affect the vagina as well as the vulva; but there is no need to use a speculum to see if it is so.

In the course of acute infective diseases severe vaginitis sometimes occurs, leading to sloughing, followed by ulceration, which when it heals may obliterate the canal. This kind of vaginitis is, unfortunately, usually not discovered till long afterwards, when retention of menses has been the result. I know not of this vaginitis having been observed and treated at its beginning; probably there is discharge, but other symptoms of the constitutional disease attract more attention.

Salpingitis in children.—In children, as in the adult, vaginitis may spread up along the uterus to the Fallopian tubes. Its symptoms have been but little studied, because such cases seldom come under the care of gynæcologists; for if a specialist is called in, it is usually one who has given attention to diseases of children. Marx * says he has several times observed perimetritis from vulvitis in infants. A child with vulvitis gets fever, nausea, hypogastric pain, and scalding in micturition; and on examination by the rectum there is a swelling felt on each side of the uterus. Arthur Martin † has published cases which show that pyosalpinx, perimetritis, and rapidly fatal general peritonitis may result from vulvitis in children. He regards gonorrhœa as the usual cause of vulvo-vaginitis having such consequences. This disease may be communicated to a child indirectly, through towels, bed-linen, or clothing. From gonorrhœal vulvitis in children may also result arthritis, and (by inoculation) ophthalmia.

* Quoted in "Annual of Univ. Med. Science," 1896. I have not been able to see the original.

† Op. cit.

After-effects of infantile salpingitis.—The vulvitis that spreads up to the tubes is of a severe kind. It often leads in the vagina to destruction of the epithelium, or even sloughing of mucous membrane in places, and consequent adhesion, and obliteration of the vagina. It leads also to closure of the Fallopian tubes. We seldom get the opportunity of observing these changes at the time they are being produced, for the reasons that I have mentioned. After these effects have been produced, the inflammation subsides. As the organs are not functionally active, damage to them produces no immediate consequences. The microbes are enclosed within a shut-off cavity. The patient gets well, and if she be young at the time this has happened, she remembers nothing about it when later she has to consult a doctor. She remains well until puberty. Then, when menstruation begins, the blood cannot get out, and hæmatometra is formed. Bleeding also often takes place into the tubes, probably in consequence of alterations produced in them by the inflammation. This blood cannot get out, because the tubes are closed. The microbes in the wall of the tubes find this retained dead blood a suitable food: they thrive and multiply. If later, in consequence of injudicious treatment, or some unfortunate accident, the tube bursts—which, in consequence of inflammatory softening of its wall, it does easily—and the dead blood escapes into the peritoneal cavity, rapidly fatal peritonitis is the result.

CHAPTER XXXI.

LEUCORRHŒA IN VIRGINS.

Occasional leucorrhœa.—It is common for young women to get for a few days at a time a little white or yellow discharge. They generally do not even ask advice, much less submit to examination, for this trifling inconvenience, hence we have no knowledge as to its cause derived from observation. I take it to be a catarrh of the vagina, like the common catarrh of the nose. In the latter affection the discharge is first of a clear mucus, then muco-purulent, then gradually ceases. The course of a vaginal catarrh is much the same as, and sensible girls pay about as much attention to it as they do to, a nasal catarrh.

Persistent leucorrhœa.—Some young women have always so much secretion from the genital passage as to make the parts uncomfortably damp, but have no other symptom of local disease. When you examine these you may find the parts presenting no sign of disease that the senses can appreciate. The disease is a chronic catarrh of the vagina. It is a minor malady which is disagreeable, but is not enough to induce the subject of it to submit to trouble, pain, or risk for its cure. It is not present in girls in robust health; but is not so linked with any definite condition of ill-health, except anæmia, as to enable you to infer its presence without inquiry.

The only reason for examining by the vagina in cases of leucorrhœa is that it may be the first symptom of malignant disease. Now malignant disease is very rare in young virgins, and if the discharge has been habitual for years it cannot be from this cause. There is, therefore, no need to insist on examining by the vagina a young woman who complains merely of whites. Prescribe iron if she is anæmic, and an astringent injection, such as zinc chlorid, ʒj, aq. ℥vj, a tablespoonful to be mixed with a pint of water for use.

Leucorrhœa, with pelvic congestion.—In some virgins you will be told not only of constant leucorrhœa, but of profuse menstruation, and of aching in the pelvic region, not removed by lying down, worse before and during menstruation. If you examine you find no appreciable morbid change. The uterus is movable, not enlarged; the cervix and vagina are healthy; there is no localised tenderness, simply general aching. The only explanation I can give is that there is general congestion of the pelvic organs. It is a chronic condition that lasts for years. In some young women it has seemed to me to have been slowly brought on by the prolonged standing required in shops. In a few, it has been mentioned that sexual feelings were so often present as to be a trouble to the patient; similar symptoms are often produced in married women by habitually incomplete sexual intercourse. From these two kinds of experience I conclude that this general congestion of the pelvic organs often depends upon unsatisfied sexual desire. In some cases the leucorrhœa is partly produced by Bartholin's gland. This cannot be inquired into as a matter of routine except by lady doctors.

Treatment.—The result of treatment is in these cases unsatisfactory. If prolonged standing or other cause that can be avoided be discovered, its removal is the first thing. In virgins local treatment is undesirable. The menstrual hæmorrhage may be so great as to make the patient anæmic, and cause suspicion of an intra-uterine growth. Some people call these cases endometritis, and treat them by dilatation of cervix and curetting. Nothing is found: only very small shreds are scraped off. The leucorrhœa comes not from the uterine body—the area of which in the virgin is less than a square inch—but from the vagina, perhaps also from the vulva. The use of the curette lessens the hæmorrhage for a month or two, and the rest in bed usually combined with this little operation relieves pain, and therefore the result seems satisfactory. But when the morbid condition has lasted long, the relief is only temporary.

I have in such a case been consulted as to marriage, which had been forbidden for reasons of health. But if the condition is due to, or associated with, strong sexual feeling, marriage will benefit. If consulted on this point, explain this

to the patient's mother, or married friend, and let her put it to the patient.

You will seldom be consulted about these symptoms early in the case, for girls are reluctant to speak about such symptoms. If consulted early, the treatment is (1) rest in bed; (2) laxatives; (3) general treatment, viz., promote sleep and the taking of food. If this treatment is early given the patient will be cured; but it often is not, and therefore the morbid condition so often becomes chronic and intractable.

New growths.—Fibroids, cancer, adenoma, sarcoma occur in virgins as well as in women who are married. They cause other symptoms besides leucorrhœa. In a virgin who has leucorrhœa, but no other symptom, it is so very unlikely that she has a new growth which needs immediate removal, that you will be wise in respecting your patient's modesty, and not urging examination until some further symptoms have developed. Some of the conditions of which I shall speak in the next chapter occasionally affect virgins; but being so much commoner in married women I do not describe them here.

CHAPTER XXXII.

LEUCORRHŒA IN MARRIED WOMEN.

By married women I mean women whose genital organs are functionally active. In such women leucorrhœal discharge may come from either the vagina, or the cervix uteri, or the body of the uterus. In this chapter I shall describe the diseases of those parts of which leucorrhœa is the chief symptom.

DISCHARGE FROM THE VAGINA.

Puerperal vaginitis.—The commonest cause of leucorrhœa is vaginitis; and the commonest kind of vaginitis is puerperal vaginitis. Ask the women who come to the out-patient room complaining of "whites," how long they have had it. Most of them will reply, "Since my confinement." During pregnancy the vagina becomes more vascular, thicker and softer than in the unimpregnated state. After delivery, involution of the vagina as well as of the uterus ought to take place. But it is often deficient. In delivery the vagina is bruised, stretched, and often torn; and from these injuries result imperfect involution and inflammation of the vagina. The vaginal wall remains larger, thicker, more vascular than the virgin vagina, and its glands secrete more. When you examine women a month or two after delivery, you can see this puerperal vaginitis; the vagina is injected, red, easily bleeding, and secreting pus. Later the redness and tendency to bleed diminish; but the hyper-secretion often continues, the woman complains of "whites," and the stains upon the linen are yellow.

The cervix also often inflamed.—With puerperal vaginitis there is often erosion and inflammation of the cervix, so that the discharge which issues from the vagina comes partly from the cervix, partly from the vagina. German investigators have used "experimental tampons" to separate the discharge from the cervix from that furnished by the vagina, and thus

demonstrate the existence and characters of the former. But as the right thing is to treat both morbid conditions when they are present together, the exact apportionment of the discharge between them is not important. The area of the vagina is much larger than that of the cervix. The prompt effect of vaginal injections in lessening the quantity of the discharge shows that most of it comes from the vagina. It will be convenient to postpone the consideration of cervical inflammation, and consider next the other forms of vaginitis.

Gonorrhœal vaginitis.—This is much less common than puerperal vaginitis. Acton* estimated the proportion of unchaste to chaste women in the community generally at about one to twelve. Some chaste women get gonorrhœa; but not every unchaste woman. Carry† found that of vaginal discharges in prostitutes, only about one in three was gonorrhœal. Gonorrhœa is an inflammation produced by a specific micro-organism, the gonococcus of Neisser; it runs a definite course, and, in favourable circumstances, tends to get well. It begins with soreness, a little swelling of the labia, and smarting in micturition (because the inflammation extends to the urethra), and then purulent discharge. The acute stage only lasts a few days. Vaginitis so acute as to make the patient keep her bed is rare. As a rule, it does not prevent the prostitute from plying her trade, hence its commonness. When the acute stage is over, the discharge gradually diminishes, and generally at the end of five or six weeks, or, if rightly treated before, gets well. Just as in the male, if gonorrhœa is neglected, gleet may continue for an indefinite time, so chronic leucorrhœa may continue long after the acute purulent stage of gonorrhœa is over.

The diagnosis of gonorrhœa.—The clinical evidence by which gonorrhœa is distinguished from other kinds of vaginitis, consists in its acuteness, its sudden onset, the thick, yellow, abundant discharge, and the redness and tenderness of the parts. These are only differences in degree from what is seen in vaginitis from other causes. They are only marked for a short time, so that often you have to conclude from the history that a discharge is gonorrhœal: and they are not

* On "Prostitution," &c.

† "Lyon Méd.," Jan., 1894.

marked in every case of gonorrhœa. Acute vaginitis, like gonorrhœa, but perhaps not quite so severe, occurs in women whose chastity no one would doubt. Hence do not affirm that a discharge is gonorrhœal unless you know that the patient has probably been exposed to infection. Even if leucorrhœa should follow an "indiscretion," it does not follow that it is gonorrhœal, for it is certain that urethritis may be produced in the male by intercourse with a female who has not got gonorrhœa, and therefore probable that sexual intercourse without gonorrhœal infection may produce vaginitis.

The identification of the gonococcus.—Recent research has given us a bacteriological test; viz. the recognition of the microbe, the gonococcus of Neisser, which causes gonorrhœa. It is said that if this microbe is present in discharge, that discharge is certainly gonorrhœal. The value of this test depends upon two assertions: (1) that the gonococcus can be identified with certainty; (2) that it is present in gonorrhœal pus and in no other secretion. The gonococcus is short-lived and easily killed; hence it is only a passing guest in the vagina. It lingers longest in the urethra; probably in the glands in the floor of the canal near the meatus; next longest in the cervical canal. Hence you will find it in the vagina only when the disease is acute and pus abundant. In a doubtful case examine the patient an hour or more after she has passed water, and squeeze secretion out of the urethra by pressing the vaginal finger upon it from behind forwards. If you can get none, put in a small blunt curette, sterilised, and draw it along the lower wall of the urethra from behind forwards. Put the drop of secretion on a sterilised glass slide, cover it with a sterilised cover glass, and spread it out by pressing on the cover glass. Then separate glass and cover, and dry the secretion by waving it above the flame of a spirit lamp. Then stain it, either with a strong watery solution of fuchsin, or a saturated alcoholic solution of methyl violet; some prefer * a saturated aqueous solution of methyl violet, on the ground that alcoholic staining solutions throw down pigmented granules of other kinds. Let two or three drops of the staining fluid fall on the dried secretion. It stains

* Carry, op. cit.

instantly. Wash the excess of staining fluid away with a pipette. Replace the cover glass. Take up the excess of fluid with blotting-paper, and the slide is ready for examination. A magnifying power of about 500 diameters will show the cocci, a higher one will show them better.

The gonococcus is a diplococcus; that is, the cocci are arranged in pairs, or in tetrads, that is, double pairs; they are never in chains. In the early stages they are found free and in the epithelium; later they are almost all within the pus corpuscles, in the protoplasm, never in the nuclei. They are identified by their size, about one μ in diameter; their shape, which is round; their grouping in pairs; and their uniformity in these respects. They are most abundant in the later stages of the disease.

The diagnostic value of the gonococcus.—When the gonococcus has been stained, there is no difficulty in seeing it, and bacteriologists can distinguish it from other diplococci. But specimens are not all equally good, and one who is not an expert may, especially if he looks at a poor specimen, be uncertain whether what he sees is a gonococcus or something else. If this difficulty of identification were the only thing that diminished the diagnostic value of the gonococcus, it would be an argument for the better bacteriological education of the general practitioner—nothing more.

But is the gonococcus present only in contagious pus? Can we be certain that gonococci in the secretions of the female genitals must have come from outside—from another genital mucous membrane harbouring similar tenants? The evidence that the gonococcus is the true cause of gonorrhœa, is that by inoculating it into the male urethra gonorrhœa has been produced, while the inoculation of pus free from gonococci has produced no effect. But may the gonococci be the descendants of innocent cocci, which, multiplying in the vaginal secretions, have produced, in successive generations, offspring having contagious properties? We know that the bacteria which make dead organic matter putrefy cannot hurt the living body; but that, under certain conditions, successive generations of them may acquire new powers that enable them to multiply in the body and kill it. We know that the secretions of chaste women sometimes produce

urethritis in men. These facts seem to me to make it needful that a vast number of morbid secretions should be examined before we can assert that when the gonococcus is found in the female genital passage it must always have got there by contagion. The gonococcus is not the only micro-organism present in gonorrhœal pus. The more important complications of gonorrhœa are probably due to other micro-organisms also thriving in the vaginal secretions.

Treatment.—Vaginitis of the kinds above described is generally successfully treated by vaginal astringent injections. The one I find most useful is a solution of zinc chloride, from five to ten grains in a pint of water. It is better to begin with a weak solution. If too weak, you can increase its strength; if too strong, it will make the patient smart. Theoretically, its effect will be more the oftener it is used. But the disease is such a small thing that patients dislike the fuss of using a vaginal injection several times a day for its cure. Practically, patients, unless strongly urged, will use it only when going to bed and getting up. This is in most cases enough to cure the patient. If zinc chloride seem ineffective, prescribe tannic acid, one or two drachms to the pint. This has the drawback that it makes permanent stains on linen. If there is soreness, begin with a saturated solution of boric acid, or a mixture of half an ounce of the liquor plumbi acetatis with a pint of water. I think it well to direct the patient to douche the vagina first with warm water to wash away the secretions already there before applying the lotion to the mucous membrane; but this, though advantageous, is not necessary. The injection should be used with a douche-tin, and in the recumbent posture, so that the top of the vagina may be its lowest part, and therefore the fluid bathe every part of it. Direct the patient either to use a bed bath or to put a macintosh on the side of the bed, arranging it so that its central part shall form a sort of gutter leading to a vessel beneath. Then let the patient lie on this, with her shoulders low, and her feet on two chairs. Then, when the tube connected with the douche-tin is inserted, and the tap turned, the fluid runs in by gravity. Forbid alcohol and enjoin as much rest as is practicable.

Doubtful causes of vaginitis.—Two causes which the

public think explain disease are (*a*) *cold* and (*b*) *fatigue*. (*a*) *Cold*. It is believed by most doctors that "catching cold," that is, chilling of the body not counteracted by warmth or exercise, may cause catarrh of mucous membranes: the nasal, the respiratory, and the intestinal are supposed to suffer thus. (I have never heard of cold causing inflammation of the male urethra.) I cannot discuss here the pathological effects of cold; all I can say is that it offers a convenient and perhaps correct explanation of some cases of vaginitis that we cannot otherwise explain. (*b*) *Fatigue*. Long-continued exertion in the standing posture leads to congestion of the pelvic organs, and this may have vaginitis as one of its effects. This is a more definite cause than catching cold, its effects follow soon, and are remedied by rest. (*c*) *Sexual excitement*, if violent or excessive, may cause vaginitis. As this cause when it has been present can seldom be found out, I can only speak of it as a possible cause.

There are certain rare forms of vaginitis that I have next to speak of.

Purulent vaginitis.—I have seen a few cases of very profuse discharge of pus from the vagina, pus being in such quantity that it lay in a pool filling the end of the speculum, whence it might have been lifted in spoonfuls, and that it led to suspicion of an abscess. But there was no abscess. It was not gonorrhœal, for there was no suspicion of infection; the patients' husbands were healthy; the pus exceeded in amount anything ever seen in gonorrhœa, and it lasted undiminished for many months instead of tending to recovery as gonorrhœa does. Braxton Hicks* has described a similar case. The profuse purulent discharge in his case had come on gradually and lasted over a year. There was no suspicion of gonorrhœa. The vagina was "granular and velvety." In my cases the vagina was red, but not granular. I know not the cause of this form of vaginitis. One of my cases yielded to treatment, but in her case there was suspicion that it was kept up by manipulation. In the other cases there was no such suspicion; but I did not have the opportunity of carrying out treatment. The treatment proper for such cases is first mild applications as for ordinary vaginitis; but if this fail, as it probably will,

* *Lancet*, 1885, vol. i. p. 611.

then apply through a speculum, after cleaning away the pus, strong carbolic acid. Repeat this once a week, and let mild astringents be used with a douche-tin twice or thrice daily in the interval. Hicks recommends tr. ferri perchl. diluted with three times its bulk of water, or powdered alum blown in through an insufflator.

Painful vaginitis.—Vaginitis is not usually painful. But there is a rare kind of vaginitis, the chief symptom of which is pain. The patient says she has pain in the passage, or that she feels swollen. The chief occasion of pain is in sexual intercourse. The patient will tell you that this varies, that sometimes it is absent or slight, while sometimes it is bad, and that the passage at such times seems blocked. You will elicit further that the pain and the dyspareunia vary with the discharge; that she is more uncomfortable, and intercourse more painful and difficult, when there is much discharge; that she has less pain when there is less discharge.

This form of vaginitis is not common. I have only met with it in either the sterile, or the relatively sterile—that is, those who had long ceased child-bearing. The treatment is like that of ordinary vaginitis, excepting that the injections should be of a sedative kind, *e.g.* boric acid or acetate of lead, and with the addition of glycerine pessaries. These, by causing transudation from the vagina, increase discharge, but they lessen congestion. The benefit derived will be greater if the patient stay in bed.

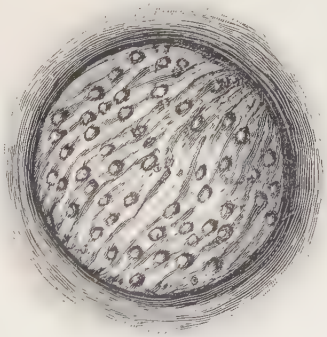


Fig. 149.—Granular vaginitis.

Granular vaginitis.—This disease was first described by Deville.* It is characterised by the occurrence of papules scattered over the whole vagina and on the cervix uteri (Figs. 149, 150). The papules are much like those of measles when at their height. Sometimes

* *Archives Générales de Médecine*, 1844.

two or three run together, and so form a papule of exceptional size. To the finger they feel like small shot embedded in the mucous membrane. With the eye they are seen to be deeper red than the surrounding surface. These papules are not inflamed glands; they have been examined and found to contain no cavity. The disease chiefly affects pregnant women, and is often the result of gonorrhœa. It rarely if ever occurs apart from either pregnancy or gonorrhœa. It is met with, therefore, in young women during the child-bearing years, from eighteen to thirty-five; its subjects are generally otherwise in good health. It is a chronic disease, and generally dates from the beginning of pregnancy. It has little tendency to spontaneous cure, for if let alone it lasts till pregnancy is over. Its symptom is a copious yellow or greenish discharge. The discharge may irritate the vulva, but this is not the rule. Beyond its dependence upon pregnancy or gonorrhœa, we know nothing of the causation of granular vaginitis. We know not why a few only of the many infected with gonorrhœa should get papules in the vagina.

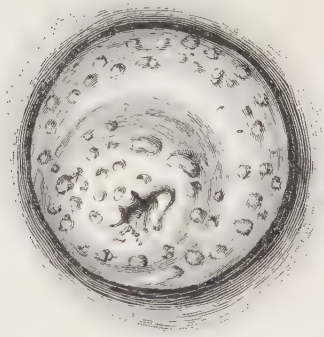


Fig. 150.—Granular inflammation of cervix. (*After Burgess, from a patient, subject of gonorrhœa, but not pregnant.*)

The treatment is, in essentials, the same as that of vaginitis of other kinds. But in this form the discharge is exceptionally copious, and therefore stronger astringents will be needed. Insist strongly upon rest, and prescribe zinc chloride gr. x. ad Oj, or tannic acid ʒ ij, ad Oj.

Pustular vaginitis.—I have seen and published* a case in which there were not only papules but pustules, like those of small-pox, in the vagina. I saw the patient about two months after delivery. There was a thick yellow discharge, said to have been present since the beginning of pregnancy.

* *Obst. Journal*, vol. vii.

From the history it seemed likely that the patient had had both gonorrhœa and syphilis; but there was nothing pointing to recent infection. The patient was quickly cured by rest in bed combined with a vaginal injection of zinc sulphate ʒj. ad Oj. I know no similar recorded case.

Vaginitis with gas cysts; so-called "emphysematous vaginitis."—I think that this curious disease is probably a late result of granular vaginitis; that it probably begins with the formation of papules, these become pustules, and then the stuff in the pustules decomposes and liberates gas, and so the vagina becomes studded with little cysts containing gas. The characteristic feature of the disease is the presence of these cysts. You feel them, like shot embedded in the vagina. With the speculum they look like greyish black steely vesicles, in size from that of a hempseed to that of a pea. Pour water into the speculum and prick one of them—and when pricked they collapse with an audible pop—and you will see a bubble of gas float up. This disease is rare. Only two cases have been reported in England, one by Gervis,* in which the cervix uteri was affected, and the other by me;† but a number have been published in Germany. Like granular vaginitis, most cases have occurred in pregnant women, and in many there has been gonorrhœa. If a result, as I think it must be, of granular vaginitis, it is a late one; for often, as in Gervis's case, every sign of inflammation is absent. Matthews Duncan thought it was "probably not an inflammation." But in a case published by Braun the vesicles contained pus as well as gas. Hence I take the view I have stated above. I think it probably a temporary and final stage, which if let alone ends in rupture of the vesicles, liberation of the gas, and return to a healthy condition. In most of the published cases the condition has been put an end to by pricking the bladders. In some the passage of the child's head during delivery has squashed the bladders, so that after childbed no sign of them has been visible.

The treatment depends upon the amount of inflammation present. Vaginitis should be treated as I have advised

* "Obst. Trans.," vol. xxvi.

† *Lancet*, 1891, vol. i. In this paper I have collected the literature on the subject.

granular or pustular vaginitis should be treated; with the addition that the cysts should be pricked and the gas let out.

Membranous vaginitis.—There are rare cases in which membranous shreds or even casts of the vagina have been passed (Fig. 151). In some cases it has been known, in others suspected, that these were due to the sloughing of the epithelium from the action of caustics. In others there has been a tendency, believed to depend upon the nervous system, to inflammation of cutaneous and mucous surfaces; the exfoliation of pieces from the vagina coexisting with membranous enteritis and eruptions on the skin.* In yet others, the passage of these membranes is inexplicable.

Fig. 151.—Exfoliation of vaginal mucous membrane. (*After R. Barnes, from a specimen, G G 5, in the Museum, St. Thomas's Hospital.*)

These membranes are greyish white in colour, and often translucent. They are smooth on both sides, although they may be thrown into folds. When examined microscopically, they are found to be made up of layers of pavement epithelium.

Treatment.—This is (1) to remove any cause that can be found; to dissuade or prevent the patient from using any injurious application; (2) to douche the vagina with a sedative wash, such as a saturated solution of boric acid, and, if this fail, with mild astringents; (3) the only drug likely to be of use given internally is arsenic: a drug which undoubtedly benefits scaly diseases of the skin. If the disease seems to be independent of a local cause, give arsenic in as full doses as the patient can take.

* *See* Rhys Griffiths, *Brit. Med. Journal*, 1894, vol. i., a paper with full references.

DISCHARGE FROM THE CERVIX.

How to ascertain source of discharge.—Discharge lying in the vagina and clinging about the cervix may come from the vagina. But it often comes both from uterus and vagina. In that case, when you wipe away what is clinging to the cervix, you may see the discharge issue from the cervical canal. There may be an erosion visible on the vaginal portion; or the discharge may come from the cervical canal, although the vaginal portion is healthy; or it may come from the body of the uterus.

There are two ways of finding out whether discharge comes from the vagina or the uterus. One is by treating the vagina or the cervix uteri, as the case may be. If the discharge comes from the cervix, treatment of the vagina alone will not stop it; and if it comes from the uterine body, treatment neither of the cervix nor of the vagina will check it. The other is, by finding disease of the cervix or body of the uterus such as causes discharge. The conditions of the cervix uteri which lead to discharge as their principal symptom are seldom met with in the nullipara, because they are generally the result of injury to the cervix during childbirth. Therefore I have first to describe what these injuries are.

Production of cervical lacerations.—In some few labours the os uteri expands solely by stretching to a size large enough to let the child pass. But in most, as the force which is dilating the os increases as the size of the os increases, shortly before delivery this force becomes great, and the enlargement of the os is finished, not by stretching, but by tearing. If the accoucheur adds to the force by pulling with forceps before dilatation is complete, the tearing is generally greater than in delivery left to nature. The tears, whether produced by unaided nature or with forceps, are generally lateral. They may involve only the vaginal portion, or they may extend up to the os internum, down into the vagina, and outwards into the cellular tissue. They are often multiple, running in a stellate fashion from the os uteri; but, if so, the lateral tears are usually the deepest. Big tears are said to be more frequent

on the left side, but the preponderance is not great. Tears, great or small, are so frequent that their presence is a valuable presumptive evidence of childbearing.

As some persons think that these tears entail very important after-effects, the first practical question is, Can anything be done to prevent such effects?

Should tears of the cervix be sewn up at once?—Some writers have advised accoucheurs to sew up at once all tears of the cervix. This is difficult and troublesome. Nay more, as Freund has pointed out, these tears are very irregular, and in the condition of parts after delivery it is very difficult to trace out the whole extent of such a tear. You may think you have sewn up the whole of it when there is a gap above or outside your line of suture which you have not perceived; and your stitches, by preventing free exit of discharge from such a spot, may favour retention and decomposition of discharge, and thus blood poisoning. In sewing up a very deep tear, it is possible to include the ureter in the stitches. During the involution of the uterus these tears heal to a very large extent. I therefore agree with Freund that the suture of lacerations of the cervix immediately after delivery is only desirable when required to stop bleeding.

The results of cervical lacerations.—(1) Each tear of the cervix is an open wound. If during lying-in the genital organs are kept clean, and the lochia flow away properly, the wounds heal. The opposite surfaces of the tear may unite, and then no trace of the tear remains. But they seldom do, and then the wound heals by granulation. Epithelium develops on one side from the mucous membrane of the vaginal surface of the cervix; on the other side from that of the cervical canal; and a fibrous scar is formed where they meet.

(2) When the cervix surrounding the os externum has been thus made into two lips, with a large gap between them, and the patient gets up, the intra-abdominal pressure drives the cervix uteri against the posterior vaginal wall. This pressure forces the lips of the cervix asunder, and eversion of the lower part of the cervical canal is the result. By this eversion, mucous membrane which should not be

exposed to any friction or pressure is exposed to friction and pressure against the vagina.

(3) The effects of such pressure and friction are not the same in every case. In some the part of the cervical canal exposed by eversion undergoes changes which make it like that of the vaginal portion. Its columnar epithelium becomes changed into squamous; its rugæ become less prominent, and may be effaced; and its colour becomes the same pale bluish pink as that of the vaginal portion. There is no inflammation of the cervix; its lips, although everted, are not thickened. There are no symptoms. This change is more likely to happen if the involution of the uterus has gone on well.

Indirect results of injury to the cervix.—In other cases, and especially in those in which there is subinvolution, the friction and pressure produce and keep up chronic inflammation of the cervix. Its lips become not only everted but swollen: instead of their profile on section being conical, thus (Fig. 152), it becomes club-shaped, thus (Fig. 153). Its surface often becomes the seat of the flat adenomatous growth, known

Fig. 152.—Profile of split cervix, not inflamed.

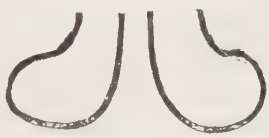


Fig. 153.—Profile of cervix, split and inflamed.

as "erosion." When the cervix has been long inflamed the exuded lymph becomes organised into fibrous tissue, so that enlargement and induration of the cervix become permanent. This is sometimes spoken of as hypertrophy, or hypertrophic swelling of the cervix. The cervix may also be the seat of a stalked adenomatous growth, known as a mucous polypus. There may be also a stalked outgrowth with not only gland tissue, but so much fibro-muscular tissue as to resemble the normal structure of the cervical canal. This has been called follicular hypertrophy of the cervix. I have now to describe these morbid conditions.

Historical interest of cervical erosions.—The commonest disease of the cervix uteri is the granular erosion. This is of

historical interest, because it was the first minor uterine disease which was treated locally. Gross disease of the womb, such as cancer, big tumours, procidentia, &c., have been known for hundreds of years. But those diseases of the pelvic organs which did not give external signs of their presence were practically unknown till the early part of the last century. Then Recamier introduced the speculum, and with it discovered and treated the granular erosion. This was the beginning of modern minor gynæcology. (Specula were used before the Christian era; but the knowledge of those who used them is dead, for we know not what they thought they saw or what they did.) The speculum was introduced into English practice by Dr. Henry Bennet. Every new method of treatment passes through an experimental stage in which it is used too much, and in unsuitable cases: this stage has to be passed before the use of the treatment can be defined. Dr. Henry Bennet exaggerated the importance of the local changes he saw, and advised and practised local treatment too much. The harm he did was transitory, and confined to his own patients. The good was permanent: he taught doctors how to cure a disease which before him they knew not, although this disease was a small one. He did more good indirectly, by opening the way to the earlier diagnosis of cancer.

What is a "granular erosion."—It is a red granular surface round the os uteri externum. It looks like a granulating ulcer, and therefore, when first found out, was called "ulceration." But there is no loss of substance; on the contrary, the granular surface is raised. The first microscopical investigations of cervical erosions were made on specimens taken from the dead body, in which the epithelium had been lost: it was supposed that this was the essential change during life, and therefore the name "*erosion*" was applied to the disease. Tyler Smith supposed that this removal of the epithelium was effected by discharge coming down from the uterine body; that leucorrhœa caused erosion, not erosion leucorrhœa.

Microscopic anatomy.—Ruge and Veit were the first who examined with modern methods erosions of the cervix removed during life. Their account has been found correct

by all who have since examined erosions of the cervix. The several layers of pavement epithelium which normally cover the vaginal portion are replaced by one layer of columnar epithelium. There is a new formation of gland tissue; recesses and follicles lined with columnar epithelium. Therefore it is a flat adenomatous growth. We know not where, or how, or why the growth begins. Ruge and Veit think that the deeper layers of the normal epithelium proliferate, and that the upper are shed. Others think that the new glands on the vaginal portion are formed by proliferation of the cervical glands, which they resemble. Another view is that the formation of an erosion depends upon persistence of a fœtal condition. These questions are only of theoretical interest. Change of squamous epithelium to columnar, and columnar to squamous, is seen in many parts of the body.

Varieties of erosions.—When the growth of gland tissue is great, it may present features which have been given special names. When the follicles are deep and many, the tissue between them resembles papillæ or villi. This condition is seen chiefly in pregnancy, growth being favoured by the increased vascularity. Such an erosion has been called a *papillary* erosion. This kind of erosion may rouse suspicion of cancer. But although it may bleed when rubbed, there is no sign of spontaneous breaking down. When follicles are deep, their openings may get stopped up, and secretion be retained. Pavement epithelium may be re-formed over such a follicle. Erosions with such block-up follicles have been called *follicular* erosions. Blocked and dilated follicles may hang down from the cervical canal, and have been called ovula Nabothi.

Etiology of cervical erosions.— We know little about the causes of adenomatous growths on the cervix, either the flat, commonly called erosion, or the stalked, commonly called mucous polypus. Erosions occur in the virgin, the nullipara and the parous. They are more frequent in the parous, and this justifies the belief that the stretching, bruising, and tearing during labour, and the eversion of the cervical canal which tearing of the cervix makes possible, favour inflammation and the growth of adenomatous tissue.

Inflammation of cervix.—With the adenomatous growth known as "erosion," there is generally inflammation of the cervix. The vaginal portion is swollen, especially at its lower part, so that, instead of being conical, it is club-shaped. Its canal is widened; the secretion from it is muco-purulent. On microscopical examination the tissue underneath and between the adenomatous growths is found infiltrated with leucocytes.

Symptoms of erosion and inflammation of the cervix.—I doubt whether erosion of the cervix without inflammation causes any symptoms. When the cervix is eroded and inflamed, there is reflected pain over the part of the skin supplied with sensory nerves from the eleventh dorsal segment of the spinal cord. According to Edis, nuchal pain is "pathognomic" of this disease. It is not pathognomic, but it is common, and I know not how to explain it. There is usually discharge, either glairy or purulent; the quantity and character depending on the amount of vaginitis associated with the cervical disease. There is no constant effect of cervical inflammation upon menstruation; this may be increased or diminished or be irregular; changes in it depend upon concomitant conditions, not on the state of the cervix, which, being only a canal through which the menses flow, takes no part in menstruation. Sexual intercourse may be rendered painful, but this is not always the case. The discharge may, but seldom does, cause pruritus.

Reflex symptoms?—When inflammation of the cervix was discovered, all kinds of reflex symptoms were ascribed to it. Symptoms of the most various kinds go with inflammation of the cervix because it is a common disease. Neurasthenia and hysteria are often associated with it because it occurs in the sex and age in which those diseases are common; and nervous symptoms are often cured by treatment which comprises applications to the cervix. But inflammation of the cervix in a patient with a healthy nervous system is a trifle and causes no reflex symptoms. When a neurasthenic woman complains of the local symptoms caused by inflammation of the cervix, and of many nervous symptoms besides, restoration of nervous tone is more important than cure of the erosion; treatment limited to the cervix will not cure the patient.

Treatment.—The treatment of erosion and inflammation of the cervix is simple and successful. It consists in cleanliness, mild astringent douches, and the repeated destruction of the abnormal epithelium by mild caustics. Prescribe a vaginal douche as for vaginitis, and let this be used night and morning. Cauterise the cervix every five or six days. This is best done through a Fergusson's speculum. With wool held by the speculum forceps clean away the discharge clinging round the cervix, and lying in the cervical canal. If the os externum be narrow, clean the cervical canal with a Playfair's probe having wool wrapped round it (Fig. **154**). Then apply the caustic. The caustic used when erosions were first discovered and treated was nitrate of silver, but this has been known to be followed by atresia of the cervical

Fig. 154.—Playfair's probe.

canal. Nitric acid and chromic acid have been used, but these are unnecessarily strong. The best is carbolic acid, with one-seventh part of water added to liquefy it; the next best linimentum iodi. Apply this first to the vaginal portion with wool held by the speculum forceps, and then to the cervical canal with Playfair's probe. Or you may pour the caustic into the speculum, and then with sound or Playfair's probe open up the cervical canal so that the fluid may run in. If you use this method, take care to mop up all the caustic, so that none may go on the vulva, for its application to the vulva will make the patient sore. A solution of sulphate of copper gr. x ad. ℥j, has been used in the way just described, but it is inferior in effect to the stronger applications. Under this treatment the columnar epithelium will become changed into pavement. You will see the smooth pale surface of pavement epithelium gradually encroaching on the red granular surface covered by columnar cells. About six weeks' treatment is usually enough. If within two months the surface which you take to be a granular erosion is not altered by this treatment, either the condition is incurable or (which is more likely) your diagnosis is erroneous. It is hardly necessary to say that any concomitant morbid condition should be treated at the same time. See that the

patient sleeps well, eats well, and leads a healthy life. Forbid alcohol. No other special directions are required.

Surgical treatment of erosion and inflammation of the cervix.—Those who thought that an inflamed cervix could cause all manner of remote symptoms of course often found that treatment of the cervix in the way described did not cure the patient, even if it removed the erosion. Instead of recognising that their diagnosis and pathology were wrong, they blamed their local treatment as inadequate, and applied their surgical ingenuity to the treatment of the eroded cervix.

There are three operations by which an erosion of the cervix can be cured: (1) Emmet's; (2) Schröder's; (3) amputation.

1. **Emmet's operation.**—Emmet saw how laceration of the cervix permitted eversion of the lower part of the canal, and exposed it to pressure and friction. It occurred to him to unite the lacerations by a plastic operation, and thus to restore the cervix nearly to its virginal condition.

How to perform Emmet's operation.—It is simple. Seize the cervix with a volsella and pull it down to the vulva. If the uterus is so fixed by adhesions that it cannot be pulled down, do not perform the operation, for two reasons: (1) because pelvic inflammation causes more trouble than inflammation and erosion of, and will not be remedied by sewing up, the cervix; therefore your operation will not benefit; (2) because when the cervix is fixed high above the vulva the operation is difficult and may be dangerous.

Having pulled down the cervix, press the lips together with a volsella, so as to see where they should come into apposition. Holding them in apposition, take a scalpel or tenotomy knife, and by a superficial incision mark out the outer boundary of the surface that should be denuded. This surface should include the angle of the rent. This done, hold the lips well apart, and pare the edges of the rent either with scalpel, tenotomy knife, or scissors. Sufficient tissue should be left untouched between the two raw surfaces to make a cervical canal. Make the raw surfaces as large as possible consistent with the maintenance of a cervical canal, and see that the planes of the raw

surfaces on each side are so inclined to one another that they can easily be brought into apposition. Take care that no mucous membrane is left in the angle of the rent or it will prevent healing (Fig. 155). The freshening of the edges is more easily done when the lips are held well apart; therefore, unless there be much hæmorrhage, pare the edges on both sides before putting in the stitches, and put in all the stitches before tying any of them (Fig. 156). The stitches are best put in by threading two curved needles on each stitch, and passing each needle from within outwards. The best suture material is either silver wire or silkworm gut. Aveling's coil and shot is the best mode of securing them.

If the rent extends high up, its apex will be near large vessels, and paring may cause free bleeding. Fatal hæmor-

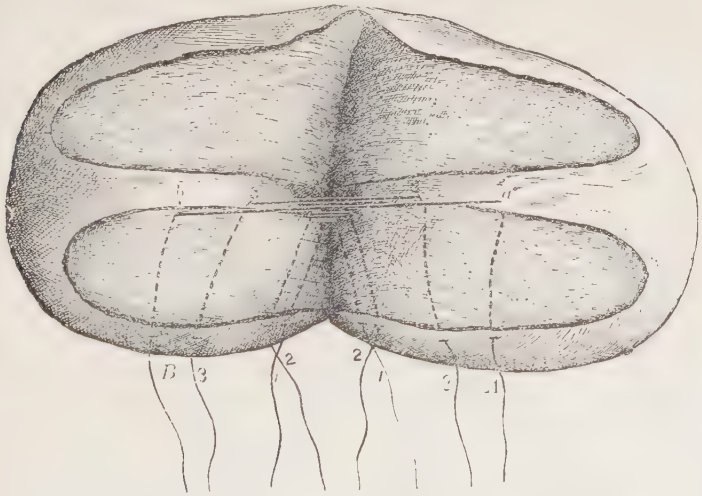


Fig. 155.—Emmet's operation: the sides of the rents pared. (*After Emmet.*)
The numbers indicate the end of the higher sutures. 1 1 corresponds to *e d*, *b c*, in Fig. 144. The lowest thread is marked *A a*, *B b*.

rhage has occurred, but ought not to happen in competent hands. Hæmorrhage will be checked when the denuded surfaces are brought into close apposition by fastening the stitches. If there be much bleeding the stitches should be at once inserted and secured, without stopping to pare the opposite side or insert all the stitches. The stitches should

be removed at the end of a week, and the patient allowed to get up.

The results of Emmet's operation.—When erosion and inflammation occur with deep tears and eversion of the cervix, Emmet's operation will cure the disease better than anything else. It is seldom required, for most cases can be cured without it; but now and then a case, after cure by the ordinary means, relapses time after time. Such a case can be permanently cured by Emmet's operation. The operation will cure some local symptoms, but nothing else. In many cases in which benefit followed this operation it has been really because the operation was an excuse for enforcing treatment of neurasthenia to which the patient would not otherwise have submitted.

Emmet's operation as a preventive of abortion.—Sometimes patients with deep lacerations of the cervix repeatedly miscarry. During pregnancy the body of the uterus contracts intermittently; and the tendency of uterine contraction to expel the uterine contents is opposed by the cervix. If the cervix is weakened by deep lacerations, its power of opposing

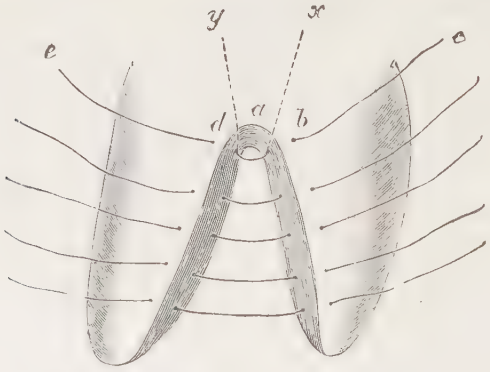


Fig. 156.—Emmet's operation: the stitches put in. (*After Doran.*)

contraction of the uterine body is weakened. By repairing such lacerations you may enable the patient to carry a child to the full term.

When Emmet's operation was first introduced, it used to be done to cure nervous symptoms and to prevent cancer. It will not cure nervous symptoms, for the condition it removes

causes none. It has been shown by Sir J. Williams that cancer of a cervix that has been torn very seldom begins in the tears. Hence it is a cruel fraud to tell a patient that she must have this operation done to prevent cancer.

2. **Schröder's operation.**—This consists in cutting out of the cervix a wedge-shaped piece, on which the adenomatous growth is situated, and bringing the sides of the gap together with stitches. I have seen patients on whom it has been done, and who have found no benefit from it. It is inferior to Emmet's operation, because it does not restore the cervix to anything like a natural condition. I shall describe hypertrophic enlargement of the cervix before discussing amputation of the vaginal portion.

Hypertrophic swelling of the cervix.—Hyperplasia, or hypertrophy of the cervix, is marked by thickening of the vaginal portion, so that its circumference at the vaginal insertion is enlarged, and below the vaginal insertion it is swollen out, club-shaped, and, if fissured, the parts separated by the fissures diverge. It is of natural colour, and smooth everywhere. It is little, if at all, increased in length, thus differing from the kinds of hypertrophy described in Chapters X. and XII. On microscopic examination such a cervix is covered with pavement epithelium, and only differs from a healthy cervix in that besides being larger it is harder, and contains more fibrous tissue. It is therefore sometimes called "areolar hyperplasia." The cervix may around the cervical canal be covered with a granular erosion.

Etiology of hyperplasia of cervix.—Such hypertrophy may be a result of subinvolution, the uterus not having returned to its natural size after delivery. In this case the whole uterus will be enlarged, body as well as cervix. If nothing but this be present, there will be no erosion and no symptoms. But hyperplasia of the cervix is usually met with associated with chronic metritis. Inflammation of the cervix causes it to be swollen, and when the swelling has lasted long, the exudation which produced the swelling becomes organised into connective tissue, and the cervix remains permanently swollen and hard.

Relation between thickening and inflammation.—It is certain that this enlargement of the cervix is not always due

to inflammation, for it may be accidentally discovered in patients who have not and never have had any uterine symptoms. I have examined large numbers of patients from ten to fourteen days after delivery, and it is then exceptional to find the cervix as thick, hard, and everted as it is often seen months or years after delivery. I draw the inference that when the thick cervix is associated with chronic inflammation, it is the inflammation which is the cause of the thickening.

Blocked-up glands in the vaginal portion.—It has been mentioned that erosions are often seen on these thick cervices. When these erosions heal, it often happens that the orifices of the newly formed glands become blocked up, and their secretion is retained and bulges them into little cysts. These cysts feel like shot imbedded in the cervix. The retained secretion may be clear, and then the little cyst will look like a spot a little paler than the rest of the mucous membrane. It may be purulent and then the spot will be faintly yellow. The pus may be inspissated, and then the secretion when let out will be of the consistence of Devonshire cream. These little cysts are important, because they may be taken for nodules of new growth and give rise to a suspicion of cancer. Their nature is ascertained, and they are cured, by pricking them and letting out the retained secretion. They are usually about the size of a hempseed, but I have seen them larger.

Sometimes a bit of the cervix which has been separated by a laceration on each side of it will be so enlarged by chronic inflammation, that it comes to be a round outgrowth attached by a narrower pedicle. To this condition Barnes has given the name "hypertrophic polypus." I have described in Chapter XXVI. the diagnosis between this condition of cervix and cancer.

3. **Amputation of cervix.**—If the cervix contains many cysts, when in Emmet's operation the cervix is pared, these may be cut into, and good union can hardly be expected if the raw surface is interrupted by a cyst cavity. It has been recommended in such cases to cut away cervical tissue so freely as to make sure of removing every cyst. It was long ago a customary practice to destroy a greatly thickened

cervix with potassa fusa. I have seen this done, but never seen benefit from it. If the cervix is so thickened that Emmet's operation cannot be done, I think amputation of the vaginal portion is the better surgical proceeding. But the symptoms caused by mere thickening of the cervix are rarely enough to make the patient willing to submit to an operation. If there are important symptoms, the patient has more the matter with her than a thick cervix, and you will not cure her by an operation on the cervix.

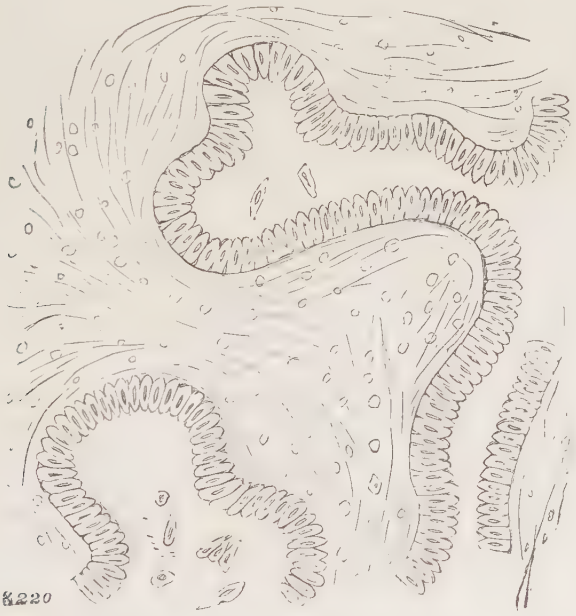


Fig. 157.—Microscopic section of mucous polypus or adenoma. (*After H. Arnott.*)

These cases of great thickening of the cervix and overgrowth of mucous membrane are chiefly important because in them the diagnosis from commencing cancer is often difficult. I have described in Chapter XXVI. the diagnosis of early cancer. Here I would only say, that in case there is a suspicion that supposed inflammatory thickening of cervix may be cancer, amputation of the vaginal portion, or extirpation of the uterus, according to the extent of the grounds for suspicion, is the best practice.

Mucous polypi.—The least important new growths of the cervix are *mucous polypi.* These grow from the mucous membrane, and their structure is in essentials identical with that of the mucous membrane (Fig. 157). They consist of an overgrowth of glands, with connective tissue between them. The glands are healthy excepting for their increased number and size; they are lined with a single layer of columnar epithelium. The connective tissue between them is looser than that of the cervix; sometimes it is so loose as to resemble in some places myxomatous tissue. The external surface of the polypus is sometimes covered with columnar epithelium, sometimes with squamous epithelium. Special kinds of mucous polypi have been described and distinguished by names based on some peculiarity. Sometimes one of the newly formed glands gets blocked up and dilated into a cyst; a polypus containing such a cavity has been called a *cystic polypus.* Sometimes the glands are very large and numerous; this has been called the *channelled polypus.* Those in which the connective tissue is dense and the glands are comparatively few, have been called *fibro-cellular polypi.* Sometimes overgrowth goes on to such an extent that a mass is formed having a stalk, and made of glandular follicles, with tissue like that of the normal cervix, between them. Such a condition is known as *follicular hypertrophy of the cervix.* It is not common. The only one I have seen occurred in pregnancy.*

Aspect of mucous polypus.—The common mucous polypus is a red tumour, in size from that of a pea to that of a cherry, presenting at the os externum, or hanging by a stalk out of it. Generally such tumours are round, but they sometimes look like a small cock's-comb. The cervix around the polypi is generally inflamed. These polypi are soft, and are crushed when seized with forceps. The cystic polypus is rarer; it is generally larger and paler, and there are sometimes many cysts, so that the tumour may be compared, but not with great exactness, to a bunch of grapes.† Follicular hypertrophy of the cervix forms a tumour which is pear-

* "Obst. Trans.," vol. xxii.

† See Thomas, "Diseases of Women," fifth edition, p. 560, for a picture of one of unusual size.

shaped, and firmer than the common form. These may be as big as an egg, but are seldom so large.

Symptoms of mucous polypi.—These growths cause few and slight symptoms. They are generally associated with inflammation of the cervix, because they press against and expand the wall of the canal. If they are large enough to hang down into the vagina, they press upon and rub against that canal. Hence they cause leucorrhœa, either cervical or vaginal, or both. Like all new growths, they attract blood to the uterus, and hence the menstrual flow is somewhat increased. If the polypus be very vascular, it may bleed when touched, and then sexual intercourse will be followed by hæmorrhage. The cervix not being very sensitive, these polypi do not cause pain. The symptoms are never severe enough seriously to injure the patient's health, and patients with nothing else the matter than mucous polypi come for advice rather because they think the symptoms may indicate the beginning of serious mischief than for what they actually suffer. Sometimes symptoms are either absent or not complained of, and the polypus is found out accidentally, perhaps *post mortem*.

Etiology.—Nothing is known of the causes of mucous polypi. They are sometimes associated with chronic inflammation of the cervix and it is reasonable to think that a part which has been hyperæmic is more likely to develop new growth than one which has not. But a mucous polyp is often seen growing from a cervix which is healthy except for the expansion and catarrh produced by the polypi.

Prognosis.—Mucous polypi may be spontaneously cured by gradual thinning and finally rupture of the pedicle. But they are so easily removed that it is not worth while to await this. It has been supposed that they might lead to cancer, but there is no evidence of this beyond the general fact that a part which has been the subject of local derangement of nutrition is more liable to cancer than a healthy part.

Treatment.—The treatment is simple. It is to take hold of the polypus with Heywood Smith's small tumour

forceps and twist it round and round till the pedicle is broken through. It is often advised to cauterise the stump of the pedicle, but this is unnecessary.

DISCHARGE FROM THE UTERINE BODY.

Discharge from the body of the uterus (apart from new growths) is rare; and still rarer is it for the discharge which escapes by the vagina to be furnished mainly or entirely by the uterine body. In most cases in which there is discharge from the uterine body there is also discharge from the vagina and cervix. Endometritis, in the proper sense of the word—that is, inflammation of the endometrium—is generally a slight and transitory thing, the only importance of which is that it may extend to the Fallopian tubes. It produces no symptoms noticeable by the patient except a slight augmentation and a little change in the colour of the discharge already present. The discharge, instead of being yellow, may become rusty. It might have been enough to speak of endometritis only in connection with salpingo-oöphoritis. But as many seem to think that inflammation of the endometrium is a common and important disease, I shall state here what we know about it.

Morbid anatomy.—When inflamed the lining of the uterus presents the macroscopical and microscopical characters of inflamed mucous membranes. It secretes pus; on section the tissue is seen to be infiltrated with leucocytes; later there is organisation of these leucocytes into connective tissue; degeneration of glandular epithelium and thickening of the walls of small arteries by hyaline connective tissue. The causes of this disease are:—

(1) **Puerperal infection.**—In the puerperal state endometritis is likely to be produced if a bit of membrane or placenta remain in the uterus, and micro-organisms of a less virulent kind than those which produce blood poisoning get to it. When this happens, the bit of retained stuff decomposes and the endometrium becomes inflamed. We do not yet know which are the micro-organisms that bring about this puerperal disease and no other. The symptoms of the endometritis are that the lochia are in excess; the flow

remains bloody longer than it should do; when it ceases to be bloody it is still more profuse than it should be, and is first rusty, then purulent. There may be slight fever, and the lochia may stink; these two latter symptoms usually go together. The involution of the uterus is retarded and therefore the uterus is bigger than at the period of involution it ought to be.

Course of puerperal endometritis.—(*a*) It may be treated and cured by removal of the retained stuff with forceps or curette, and irrigation of the uterus with biniodide solution, 1·2000.

(*b*) It may be spontaneously cured by expulsion of the retained stuff, and restoration of the endometrium to a healthy state by the action of leucocytes. This event, although possible, cannot be counted on.

(*c*) Natural cure, though it take place, may be slow and incomplete, and discharge linger on for months after delivery.

(*d*) The inflammation may spread to the Fallopian tubes, and from them to the peritoneum and ovary, and thus chronic salpingo-oöphoritis be the result.

I have described puerperal endometritis as due to retention of a bit of placenta or membranes, because these are the cases in which the mode of origin is clearest. But in many cases there is no evidence of anything having been retained. Puerperal endometritis may be produced without this favouring condition, but in such cases we know not how it comes about.

Symptoms of chronic catarrhal endometritis.—These are slight. White or yellow discharge. Pruritus, if the discharge is irritating. Menstruation may be increased in quantity, but is not always. In most cases of leucorrhœa the discharge comes from the vagina and can be cured by vaginal injections. In some the cervix is thick, granular and inflamed, and furnishes some of the discharge. In these treatment of the cervix and the vagina stops the discharge. In a few the discharge continues after the cervical erosion has been cured, and notwithstanding the use of vaginal astringent injections. If this is the case, you may infer that the discharge comes from the body of the uterus. It is only in this way—that is, by the failure of treatment

applied to the lower part of the genital tract—that chronic catarrh of the body of the uterus can be found out.

(2) **Gonorrhœa** may cause endometritis. As the patient already has a discharge from the vagina, the spread of the inflammation to the uterus causes no change in the symptoms. It may spread from the body of the uterus to the Fallopian tubes, and thence to the peritoneum. When this happens, there are no symptoms by which the extension of the disease can be detected until the peritoneum is reached. If such extension takes place at all, it takes place early. If the peritoneum suffers, it is usually within two months of the date of infection.

Gonorrhœal inflammation of the vagina may get well without treatment, although more slowly and imperfectly than if proper treatment be used; and so, I doubt not, may gonorrhœal endometritis. If it does not, the only symptom it causes is discharge, and the same rule of treatment applies here as in endometritis of puerperal origin. If the discharge continues in spite of treatment of the cervix and vagina, you may conclude that it comes from the body of the uterus.

(3) **New growths.**—A *dead fibroid*, whether disintegrating or not, may set up purulent endometritis. If micro-organisms get into the uterus, they find in the dead tissue a soil suitable for their growth. *Cancer* sometimes does so, in like manner. Other rarer tumours, such as *sarcomata* or *adenomata*, may also do it. In most cases this endometritis is a disease secondary in importance to the condition which caused it. But it may spread along the tubes and lead to peritonitis.

(4) **Banal causes.**—There are alleged causes of endometritis, which a French writer* has grouped together under the happy term "*banal*." This word, according to the dictionary, means trite, commonplace, hackneyed; and in matters medical this often means accepted and copied from book to book without inquiry. Some of these "banal" causes probably do cause endometritis, although there is no scientific proof of it in the case of any of them.

Among these banal causes are (*a*) *suppression of menses.*

* Doléris.

If any harm comes from this, it probably is endometritis. But the menses are often suppressed without harm; and we know not in what cases it does harm, or how, or why. (*b*) *Retroflexion.* In most cases the change in the shape and position of the uterus causes no trouble. In about 10 per cent. the circulation is interfered with, and morbid effects follow, endometritis possibly being one; but the nature of the changes in the uterus has never been demonstrated. (*c*) *Anteflexion.* (*d*) *Congenital stenosis.* Neither of these peculiarities produces any morbid effect. (*e*) *Overloading of the bowel.* This makes people feel ill, but I know of no *à priori* or other reason for supposing that it causes endometritis. (*f*) *Over-exertion during menstruation,* such as from riding, driving, dancing, treadle-work, as with a sewing-machine or bicycle. Many women do these things while they are menstruating as well as at other times and without harm. Continued to the point of fatigue they are injurious, whether the patient is menstruating or whether she is not. I know of no evidence that endometritis is the special form of disease apt to be set up; but as such causes may produce uterine hæmorrhage, I think it possible that they may cause endometritis. (*g*) *Excessive sexual activity.* This cause leads to increased flow of blood to the generative organs, and such hyperæmia may perhaps go on to the production of endometritis; but nature commonly prevents this by hæmorrhage, which relieves the hyperæmia.

(5) **Endometritis in febrile diseases.**—In acute febrile diseases there is sometimes endometritis. I have seen the uterus full of pus in a young girl dead of enteric fever. In cholera, enteric fever, measles, and small-pox, hæmorrhagic endometritis—called also "pseudo-menstruation"—has been described. Such endometritis is at the time subordinate in importance to the constitutional disease which produces it. The state of the patient forbids local treatment unless absolutely necessary, and the effects of the endometritis are not serious enough urgently to require treatment. I have never been called upon to treat such endometritis. Chronic endometritis following these diseases is rare, but I have known increased menstrual hæmorrhage and leucorrhœa follow measles. As these febrile diseases,

taken collectively, are common, it is probable that such endometritis usually ends in recovery when the disease causing it has done so.

Symptoms of endometritis.—The symptoms of genuine endometritis, whether gonorrhœal or of banal origin, are very slight. There is little or no pain. The discharge from the vagina is not augmented to a degree which enables you to assert that catarrh has spread to the endometrium. The diagnosis is made by the physical signs. The cervical canal is dilated, so that a Playfair's probe with cotton wool wrapped round it passes to the fundus easily. Round the os externum the mucous membrane is red and has lost its smooth and shiny appearance. There is a rusty, bloody, or purulent discharge issuing from—not merely lying about—the canal. Passage of a sound causes bleeding.

Treatment of acute endometritis.—Like all inflammations, endometritis will get well if its cause be removed and the patient put under favourable conditions. The one serious consequence of endometritis is the extension of the disease to the peritoneum; if this be averted, the disease is a trifle. Keep the patient at rest; this is most effectively attained by ordering her to bed. Keep the vagina clean and lessen inflammation in it by antiseptic and sedative or astringent douches; a saturated solution of boric acid if the vagina be sore or the discharge irritating; chloride of zinc, $\frac{1}{4}$, $\frac{3}{8}$, or $\frac{1}{2}$ a grain to the ounce, if the discharge be copious. This will prevent the addition of fresh germs to those with which the leucocytes are already battling. Under such treatment most cases will get well in a week or two.

The name "endometritis" has been applied to adenomatous growths. I have described this form of "endometritis" in Chapter XXV.

CHAPTER XXXIII.

LEUCORRHŒA IN OLD WOMEN.

A VAGINAL discharge in a woman whose genital organs have atrophied is generally copious and always morbid. It may come from the vagina, or from the uterus, or from both. Its source can sometimes be found out with the speculum, sometimes only by the effect of treatment.

Physical signs.—With the speculum you see that the vagina is smooth, injected, sometimes bleeding, and covered with pus. If the discharge is only vaginal the cervix will be healthy. The visible part of the cervix may be reddened, and pus lie in the os uteri, although the discharge is vaginal. If so, the pus can be wiped away from the os. If the discharge be from the uterus, you may see fresh pus run out of the os after you have cleaned it; but the absence of this sign does not prove the discharge to be only vaginal. Pus may be in the uterus, and yet not run out at that moment. If examination leaves you in doubt whether the discharge is vaginal or uterine, the effect of treatment will inform you. Astringent applications to the vagina will have no effect upon a discharge which comes from the uterus.

Causes of senile vaginitis.—Vaginitis in an old woman may be due to *gonorrhœa.* It may be due to *alcoholic excess;* in this case the treatment is to stop the alcohol. Some think it may be *gouty.* As we have no test by which to tell whether a malady is or is not gouty, this is only a theory. I have seen an old woman who had a patch of eczema on her foot, and also suffered from vaginitis, and who said that the two diseases varied inversely with one another; that when the foot was better the discharge was worse, and *vice versâ,* but I had no opportunity of observing this for myself; I had to take the patient's word. The presence of a *pessary* may cause vaginitis. Matthews Duncan described "*lupous*" vaginitis. With so-called "lupus" of the vulva, better called esthiomène.

vaginitis is often present. This vaginitis is identified by the past or present existence of the growths or ulcerations of esthiomène, by its chronicity, and its tendency to recur. Duncan described a form of vaginitis depending on esthiomène, but preceding the full development of that disease, so that it was "lupous," although "lupus" was not present.

Bleeding vaginitis.—Hicks* has described a case of an old woman in which the discharge was blood, and the vagina was covered with granulations like a healing wound. I have never seen such a case. Hicks's case gives no information as to the cause of the condition. His case was cured by a month's treatment.

Treatment of vaginitis in old women.—The treatment of vaginitis is the same in old women as in young women; but the disease, like all inflammations occurring in those whose tissues have begun to degenerate, is harder to cure and relapse is commoner. If intractable, use strong applications such as those advised for purulent vaginitis (page 449).

Uterine leucorrhœa.—The discharge may be uterine. After you have mopped away the discharge lying about the cervix you can see fresh discharge flow down. You have found that treatment by applications to the vagina has failed to lessen or alter it materially. Examine the uterus bimanually. If it be enlarged, there is probably a new growth within it: either a fibroid, or cancer, or some rarer growth. These are described in Chapters XXVII. and XXVIII. If the uterus is not enlarged, the disease is probably *senile endometritis.*

Senile endometritis.—This is so rare a disease that I know no good account of its morbid anatomy. Skene has described it,† but he does not say how many cases he has seen, or how many specimens, if any, he has examined. Hence I cannot tell how far his statements are based on observation and how far only on conjecture. He says there is atrophic thinning of the whole mucous membrane: that the epithelium changes from ciliated to pavement, and then is lost; that there are granulations "of low vitality," and pigment spots taken to be ecchymoses; and that the glands become obliterated. In

* *Lancet*, 1885, vol. i. p. 610.

† *New York Journal of Gynecology and Obstetrics*, June, 1894.

the only case of purulent discharge from a senile uterus in which I have examined the uterus, it contained an adenomatous growth infiltrated with leucocytes; the growth at one part formed a polyp the size of a pea.* The only other English cases that I know of in which the uterus has been examined and described have been published by Matthews Duncan,† Galabin,‡ and Horrocks,§ and in them the morbid appearances were similar. The best paper on the subject is by Maurange,‖ who has reported a few other cases.

Symptoms and course.—The symptoms are copious purulent discharge, often mixed with blood; pain, which may be so bad as to keep the patient awake at night; and sometimes wasting. The discharge is the invariable symptom; pain and wasting may be slight or absent. The disease begins after the menopause. No connection has been shown between it and any condition existing during menstrual life. We know nothing as to its causation. It occurs in the virgin, the nulliparous, and the parous; I know not in which it is, relatively to their numbers, the most frequent. It has little or no tendency to spontaneous cure. I have seen one case which had gone on for four years. In some, notwithstanding the persistence of the disease, the condition of the patient changes little. In others the course of the disease is clinically that of cancer. In a case published by Matthews Duncan this was so. There was a *post-mortem* examination and no disease except that in the uterus was found; microscopic examination of the uterus showed no cancer, but only chronic endometritis. In other cases the uterus has been removed during life, because the disease was thought to be cancer. In some cases of cancer of the uterine body, as in one which I have elsewhere published,¶ the growth for a long time does not project on the surface of the endometrium; and if the cavity is explored before there is any projecting growth to be felt, the case will be taken

* "Obst. Trans.," vol. xxxii. p. 196.

† "Obst. Trans.," vol. xvi. ‡ "Obst. Trans.," vol. xxiv. p. 300.

§ "Obst. Trans.," vol. xxix. p. 298.

‖ "Archives de Tocologie," May, 1896.

¶ "Obst. Trans.," vol. xxxiii. p. 91.

for endometritis. If you scrape away bits which show no sign of cancer when examined microscopically, this does not disprove cancer, for it may be present at some other part of the uterus, though not in the bit you have detached.

These two facts—(*a*) that the disease is hard to distinguish from cancer in an early stage; (*b*) that it sometimes runs the same clinical course as cancer—lead me to think that if milder treatment does not quickly produce decided benefit, it should not be continued, but the uterus should be removed.

Treatment of senile endometritis.—When consulted by an old woman about a copious purulent vaginal discharge, you should first treat the vagina. Swab out the vagina with strong carbolic acid. (Take care that none goes on the vulva.) Prescribe frequent astringent injections such as zinc chlorid. 5 to 10 gr. to the pint. Begin with the weaker and increase the strength, if necessary. Repeat the carbolic application two or three times, if necessary, at weekly intervals. If discharge comes from the uterus, there may be so little of it as not to trouble the patient when the vaginal discharge has been stopped. If treatment of the vagina does not abolish the discharge, the cervix should be dilated with laminaria tents, and the interior of the uterus explored. If growths are felt, they should be scraped away and examined with the microscope. If there are no outgrowths, the endometrium should be scraped with a blunt curette, any bits detached reserved for the microscope, and then the interior of the uterus swabbed with strong carbolic acid or lin. iodi. This will almost always remove the symptoms for a time. If after a short interval they return, and become as bad as before, the best treatment is to remove the uterus.

Part VII.

DISORDERS OF THE VULVA.

CHAPTER XXXIV.

PRURITUS VULVÆ.

THE diseases which in this part I speak of attract attention by causing itching, soreness, or swelling of the external genitals, or a combination of these symptoms. I take first the slighter of these morbid changes.

Pruritus vulvæ.—Pruritus, that is, itching of the vulva, is a common complaint. In many women it is only occasional, the worst time being the few days following menstruation. In a few bad cases it is persistent day and night, causes an almost irresistible impulse to rub and scratch the part, and causes both great local suffering and, by preventing sleep, injury to health.

Local changes.—These have been studied by Webster * and by Sänger.† Their accounts are based on the examination of strips of mucous membrane taken from cases in which the pruritus was so intractable that, as a last resource, the itching part was excised. It is difficult to say whether the changes observed were primary, and caused the itching, or whether they were due to chronic inflammation produced by long-continued rubbing and scratching. I think them mainly of the latter kind.

The most sensitive part of the vulva is the clitoris, which has a special sensibility of its own. Next to that come the preputium clitoridis, the nymphæ, and last the labia majora. The relative fineness of tactile sensibility in these parts is, according to Webster, as 1, 1·25, and 4. The *clitoris* contains

* "Laboratory Reports, R. Coll. Phys., Edinburgh," vol. iii., 1891.

† "Cent. für Gyn.," 1894.

two groups of the bodies known as the genital corpuscles of Krause—that is, tactile corpuscles of simple structure believed by him to be peculiar to the genital organs. One group lies on each side of the middle line of the glans, more abundantly on the upper surface. There are also a few Pacinian bodies at the posterior part of the glans clitoridis near its junction with the prepuce, and a few Meissner's corpuscles. In the *labia minora* there are a few Pacinian bodies, chiefly in the upper part of the labia, near their attached edges. The most numerous nerve endings are the end bulbs (not the genital corpuscles described by Krause), which are found in the papillæ. Meissner's corpuscles are rare. These nerve terminations are the sensory organs of the vulva.

In chronic pruritus the mucous membrane is sometimes thickened, sometimes not, according to the duration of the case and the amount of rubbing and scratching. Microscopically there are signs of chronic inflammation, exudation of leucocytes, and organisation of fibrous tissue. There is fibrosis of the nerves and the nerve endings, or rather of Meissner's corpuscles and of Krause's genital corpuscles; for the Pacinian bodies have not been observed to be so affected. Webster thinks that this fibrosis is a change distinct from the chronic inflammation due to friction, and his opinion is entitled to respect.

The causes of pruritus fall into five classes:—

1. Adventitious.
2. Disease of the skin or mucous membrane (notably diabetic eczema).
3. Irritating discharges.
4. Venous congestion.
5. Nervous degeneration.

1. **Adventitious causes.**—(*a*) *Pediculi*, when acquired by a woman habitually clean, cause itching. The seat of this is the hairy part of the skin. By inspection you will see the insects and their eggs clinging to the roots of the hair. Dirty women, who habitually carry pediculi, seem to suffer no annoyance from them. There are many ways of killing pediculi. Prescribe ung. hyd. amm. chlor. to be rubbed every night into the skin on which hair grows. Let the treatment be continued for three nights, for by one

application eggs may remain unaffected which will be afterwards hatched. A germicidé solution may be used, but the rubbing in of an ointment ensures its thorough application. The *acarus scabiei* may burrow in the vulva and cause itching, but itching from this cause is not limited to the vulva. (*b*) *Dirt.* Some women, especially among the unmarried, who are scrupulously clean in other respects, do not often carefully wash the vulva; and if this is not done, secretion may accumulate and may cause itching. In such patients you may find layers of sebaceous matter in the recesses between the labia minora and majora and between the clitoris and its prepuce. The treatment is to explain to the patient the necessity of washing the internal folds of the vulva as well as the outside skin. (*c*) *Worms.* These are said to be causes of pruritus vulvæ. I have known adults complain of thread worms, who denied ever having had pruritus vulvæ. I suppose they may cause it, but I have never seen a case so caused, and I believe that such cases are rare. The treatment is to kill the worms. (*d*) *Pessaries.* Sometimes the wearing of a vaginal pessary will cause pruritus, the vaginal secretions seeming to form with the material of the pessary an irritating compound. This may happen with pessaries of almost any material. I have known it with pewter and with indiarubber instruments. We know not why it happens and therefore can neither predict nor prevent it. The treatment is to remove the pessary and, if required, substitute one of a different material.

2. **Inflammation of the skin or mucous membrane.**—Any inflammation about the vulva, when not enough to produce soreness, may cause itching. Among these are eczema, herpes zoster, furuncle, inflammation of Bartholin's gland, chancre, &c. Look at the part and you will see whether any such condition is present. I have seen urticaria mentioned as a cause of pruritus vulvæ; I have never met with it. These diseases and their treatment will be described in the next chapters.

Diabetes and pruritus.—In any case of severe pruritus, examine the urine for sugar. Its cause may be glycosuria or diabetes. In women after the climacteric, glycosuria is a

frequent cause of pruritus.* The symptom has been thought due to the direct irritation of the skin by saccharine urine. The torula cerevisiæ has been found in the secretion clinging to the vulva, and the inference has been drawn that fermentation in the saccharine urine makes it irritating. The pruritus has also been put down to the presence of sugar in the perspiration. But these theories do not explain it, for the dermatitis which is present is not limited to, nor does it start from, or chiefly affect, the parts most liable to be moistened with saccharine urine; nor does the distribution of skin inflammation in diabetes correspond to the activity of perspiration. Lecorché found pruritus present in about a third of diabetic women. Glycosuria brings with it a tendency to inflammation of the skin, and the itching of the vulva is produced by this inflammation. In the majority of cases it is a dry papular inflammation; indeed, there may be very little to be seen. The itching precedes the dermatitis, and the dermatitis is aggravated by rubbing and scratching. It may be a moist eczema, with much discharge, or there may be a boil or boils on the labia. This tendency occurs early in diabetes; itching of the vulva is not uncommonly the symptom which leads to the discovery that there is sugar in the urine. Fagge says that it comparatively seldom occurs in those cases in which the quantity of urine is great and the typical symptoms of diabetes are fully developed. Remember that glycosuria and diabetes are not the same thing.

Treatment.—The treatment here consists of two parts—(*a*) the general treatment of glycosuria by diet, drugs, &c., for full information upon which consult works on general medicine; (*b*) the local treatment, which consists in great cleanliness and applications such as those I shall elsewhere advise for eczema not of diabetic origin. The difference between diabetic and non-diabetic dermatitis is that the former will not get well till you have cured the general condition which is its cause. As you improve the diabetes, your local treatment will be more effective.

3. **Irritating discharges.**—Any discharge which keeps the vulva moister than usual may cause itching. In

* *See* Lecorché, "Annales de Gynécologie," Oct., 1885.

gonorrhœa, in cancer, in senile endometritis, irritation of the vulva may be a prominent symptom. Therefore, in investigating a case of pruritus, always inquire about discharge and notice the condition of the cervix and vagina. If there is an abnormal discharge, you must correct this to cure the itching. The treatment of the discharges I have described in Part VI.

In some of the worst cases of pruritus you will find nothing to account for it. You can see nothing wrong with the skin or mucous membrane of the vulva. The patient will tell you she has little or no discharge, and when you look you only find whitish mucus in the vagina. With this apparently healthy condition of the part there may be continual itching, making the patient miserable, and this may occur in the virgin. I know not the cause of the itching in these cases, but I suspect it to be a microbe which decomposes the vaginal secretions and makes them irritating.

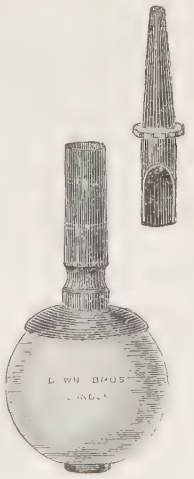


Fig. 158.—Insufflator

Treatment.—The treatment of these cases consists, in the first instance, of sedative and antiseptic washes to the vagina, followed by sedative powders to the vulva. Tell the patient to douche the vagina with a saturated solution of borax or boric acid, or a lotion made by adding liq. plumbi acet. ʒij to a pint of water; and after this, to hold the labia apart, and puff on a powder to the mucous membrane with an insufflator (Fig. 158). The best are "dermatol" (a trade name given to a gallate of bismuth), thiol, and boric acid. These applications will give relief—sometimes complete relief. But the relief given may last for so short a time that complete relief can only be got by repeating the application oftener than the patient conveniently can. If so, the best thing is to swab the vagina and cervix with strong carbolic acid seven parts to one of water. I have cured obstinate cases in this way, and the success of this treatment I can only

explain by its germicide effect. An application of this kind will generally relieve for some days. It may completely cure, or it may have to be repeated more than once. Take care that none of the acid goes on the vulva, for if it does, it will produce long-continued smarting.

4. **Venous congestion.**—Itching is especially frequent when there is venous congestion of the pelvic organs, in pregnancy, and in corpulent people with varicose veins, just as pruritus ani is common with piles. Pruritus vulvæ is said to occur from venous congestion produced by heart, lung, or liver disease; but it is not often complained of, possibly because it is a trifle compared to the other concomitant symptoms. The itching is an effect of a combination of causes; the nutrition of the parts is lowered by clogging with venous blood and they are irritated by discharge.

Treatment.—The treatment consists, as in other kinds of pruritus, of cleanliness and sedative applications: vaginal douches of borax, boric acid (saturated solutions), or lead acetate; powdering the vulva with boric acid, dermatol, thiol, or nitrate or carbonate of bismuth. Calomel ointment is sometimes useful, but in pruritus vulvæ I have not found this so useful as in pruritus ani. Why it should relieve itching of the anus better than that of the vulva I know not. In this form of pruritus, so long as the cause exists, the effect of local treatment will be only temporary.

Pruritus of this kind is increased by exercise, by drinking much fluid, and especially by alcohol. Therefore, if the pruritus is the only thing to be considered, it is well to forbid these things. But you should take all the features of the case into consideration and not limit your view to the local trouble.

5. **Nervous.**—Itching of the vulva in aged women is sometimes a symptom of degenerative changes in the nervous system. This is not common. Treatment, if the itching be from this cause, will fail. Therefore, in an old woman, look for some other cause, and if in doubt give the patient the benefit of the doubt, and use remedies (such as those mentioned above) which may relieve and will not harm.

Dr. Savill* has recommended, on empirical grounds, for general pruritus, calcium chloride, in doses of from 20 to 40 grains. Thus :—

℞ calcii chloridi, ʒ ss.
tr. aurantii, ʒj
aq. chlorof. ad ℥j

three times daily in water after meals. Others have found this remedy useful, but I cannot say that the results I have found from it have been striking.

Some other causes are assigned in books for pruritus. *Jaundice.* This sometimes causes general itching and the vulva may share in this; but I know not of its causing pruritus of the vulva alone. *Uræmia.* If in this disease pruritus vulvæ be present, it is such a trifle in comparison with the grave general symptoms, that it is seldom mentioned. I know of no investigation into its frequency in uræmia.

Treatment of pruritus by excision.—Pruritus has been treated with success by excision of the skin and mucous membrane which are the seat of the itching. As most cases of pruritus can be otherwise cured, those in which this will be needed are rare. The only cases suitable for it are those in which all other treatment has failed, and the itching is limited to a definite tract of diseased integument which can be taken away.

* *Brit. Med. Journal*, Sept. 19th, 1896.

CHAPTER XXXV.

INFLAMMATIONS AND ULCERATIONS OF THE VULVA.

The diseases which I describe in this chapter have as their main symptom soreness of the vulva. There is often also swelling; but soreness, rather than swelling, is that which makes the patient seek advice. Sometimes "irritation" is complained of, but this word is used vaguely by women; you will find it sometimes means soreness, sometimes itching. If one of the diseases I am about to describe be the cause of the patient's suffering, you will see it when you inspect the vulva.

Inflammation of sebaceous follicles.—This is an occasional cause of pruritus. It is a pathological process allied to the acne which occurs on the face, and therefore Huguier called it *vulvar acne*. In the beginning it is not an inflammation, but a distension of the gland by an accumulation of its own secretion. Whether, and if so why, the duct is blocked, whether the secretion is excessive, or whether it is abnormal in quality, we know not. The amount of sebaceous secretion retained at the bottom of folds in the vulva differs in different women; sometimes much of it is seen in women in every other respect most attentive to personal cleanliness. When a sebaceous follicle is distended, the retained secretion after a time provokes inflammation, and the follicle suppurates. When the follicle is emptied the inflammation subsides. These inflamed follicles are seen chiefly on the hairy parts; they are not numerous; there are only a few scattered here and there; some yellow or white, the size of a pin's head, or smaller; some inflamed, with a little circle of redness round each. There is no accompanying dermatitis. The irritation they cause is only slight; nothing like the intolerable itching of eczema. We know nothing about the cause of this disease. Crops of inflamed sebaceous follicles may come and go for years.

The treatment is to squeeze out the contents of the distended follicles, and wash the vulva thoroughly with a germicide soap; of which there are several made. Calcium sulphide, one or two grains internally, three times a day, will sometimes make acne of the face disappear. I have had no experience of its use in vulvar acne, but I should think it worth trying.

Herpes zoster of the labium.—This is a rare form of herpes. It is distinguished from other inflammations of the labium by its acute and apparently causeless origin, its unilateral character, its rapid recovery, and freedom from relapse. It consists in a crop of vesicles, on one side only, the advent of which is preceded by pain, and the development of which is accompanied by congestion of the surrounding skin and mucous membrane. The vesicles become pustules, which break and dry up into scabs. The inflammation then subsides, the disease gets well, and never relapses. Fagge says that the vesicles run exactly the course of those of smallpox. The disease differs from smallpox in that the pustules occur only in the part supplied by one nerve, and that the disease depends on inflammation of that nerve.

There is no treatment that has any effect on the course of herpes zoster. It runs its course and gets well within a fortnight. All that you can do is to diminish the effect of the inflammation around. Lessen vaginal discharge by an astringent injection (zinc chloride, 5 grains to the pint); and vulvar soreness and irritation by a sedative powder, such as boric acid or dermatol.

Dermatitis, or "eczema" of the vulva.—I use the word "eczema" because this disease is commonly described under that name. Dermatitis is more correct. The different morbid changes which inflammation of the skin may present cannot, as a rule, be demonstrated on the skin of the vulva as they can on that of more exposed parts. This is because (1) the skin of the vulva is moistened by secretions, is covered with hair, and is liable to friction; and (2) the disease is seldom seen in the beginning. Hence all that is seen in most cases of this disease is that the labia are swollen, red, moist, and excoriated. At

the periphery of the disease, on the thighs or the lower abdomen, a few vesicles or pustules may be detected, but as a rule, no characteristic skin lesion can be seen on the vulva. The inflammation often extends beyond the vulva laterally to the genito-crural fold and upper part of the thighs; backwards to the perineum and natal cleft; forwards to the mons veneris; and inwards to the nymphæ. When the mucous membrane is affected, it becomes white, thick, swollen, something like the skin of a washerwoman's hands, and loses its polish, so that it looks drier than normal; when spread out, red sulci are seen marking its folds. This condition is sometimes ascribed to friction, and as in this condition itching is intolerable, there has generally been friction, but friction alone does not produce such an appearance.

Etiology.—This disease is not common. It affects usually fat, elderly women, and those who are pregnant. We do not know its cause. Probably it depends upon a parasitic micro-organism. It has been thought to depend on diet, but there is no diet from which we can predict that eczema will arise, and no regulation of diet which will cure it. It is often said to depend upon gout, or a gouty tendency or diathesis. But we have no definite criteria by which to distinguish a patient who has a tendency to gout from one who has not; and till we have such criteria this theory cannot be tested. To call the disease "gouty" is only a verbal explanation; it assigns it without good evidence to a cause about which we know next to nothing. The disease is made worse by scratching; by causes which dilate the vessels of the part, such as long standing or walking, and the use of alcohol; and by those which increase cutaneous secretions, such as the drinking of much fluid. Eczema of the vulva often begins suddenly. If properly treated, it will get well in two or three weeks; if neglected, it may go on for months or years, and the more chronic it becomes the more difficult it is to cure.

Relation to diabetes. — Dermatitis of the vulva is especially frequent in the diabetic. Some have thought it due to some irritating effect of saccharine urine and sweat. But, as Boulton has pointed out,* the inflammation extends to

* *Obstetrical Journal*, 1880.

parts—*e.g.* the mons veneris—with which urine does not come in contact; and as to sweat, if this be the cause, it is singular that it should not occur in any other part of the body; singular also that the sweat should give so much trouble in a disease of which dryness of the skin is a prominent symptom. We know not how diabetes causes vulvar eczema, any more than we know how it causes carbuncles; they are probably both trophic lesions, produced through the nervous system. The explanation is here not important; the fact is very important. For if vulvar eczema is diabetic, the way to cure it is to treat the diabetes.

Diagnosis.—This is easy. The symmetrical redness, swelling, and moisture of the labia are seen when the parts are inspected. Separate the labia and see that there is no circumscribed growth or ulceration. Then test the urine for sugar.

Treatment.—I describe the treatment of an acute non-diabetic case. The treatment of a chronic case is the same, only the slower result may make the patient less diligent in it.

Put the patient under favourable conditions, removing causes which aggravate the disease. Therefore keep her recumbent; forbid alcohol; tell her to drink no more fluid than is needful to allay thirst; and not to scratch. Excepting as to alcohol and the amount of fluid, diet is not important.

Whether the disease be produced by a microbe or not, there is little doubt that the secretion of the morbid surface is locally irritating and contagious. Therefore an essential part of treatment is to cleanse the surface, by washing away the discharge and killing, if possible, its contagious elements; and this must be done by non-irritating agents. Direct the patient to take a hip bath night and morning of water at a temperature of about 98°, to which Wright's liquor carbonis detergens has been added, in the proportion of a tablespoonful to each gallon of water, remaining in the bath long enough, and so bathing the part while in it, that all scab may be detached. After the bath, let her dry the inflamed part by puffing powdered boric acid on to it with an insufflator. If there be discharge from the vagina, this

must be checked by an injection which shall combine a sedative with an astringent effect. The drug which unites these properties is lead. Order liquor plumbi acetatis, half an ounce to be mixed with each pint of water. Clinical physicians find that eczema is benefited by aperients and antacids. We know not why, but in reasonable doses they can do no harm. Therefore give mag. sulph. ʒj, mag. carb. gr. x, three times a day. Arsenic is powerful against skin lesions; therefore add liq. Fowleri ♏ ij to each dose, and increase the amount of arsenic if it does not cause irritation of the conjunctiva, or epigastric pain.

I have found treatment on these lines successful. I presume not to place the remedies in order of importance. But speedy cure is only effected when the disease is recent; when it has lasted long it is very obstinate. In such cases, when local irritation makes life intolerable and remedies fail to give relief, more radical measures are justified. Such cases have been cured by cutting away the diseased skin and mucous membrane. The thick tender vascular labia are thus replaced by a fibrous cicatrix; and if the patient be old, such an operation entails no functional disability. I have not yet met with a case so intractable as to require such treatment.*

Follicular vulvitis.—Matthews Duncan† remarks that though this is said to be a common disease, yet he has never seen a case. It is said to be common, because so many writers of textbooks have copied from one another, instead of (like Duncan) writing from experience. The name has been applied to two different conditions.

One of these diseases was described by Huguier‡ (Fig. 159). It is seldom seen in English hospital practice; still less often in English private practice; common in foreign hospitals, in which women of the lowest class are compulsorily detained. It consists of inflammation of the piliferous and sebaceous follicles of the skin of the vulva, and sometimes the adjoining skin. It is most frequent in pregnant women. Three-fourths of the cases seen by Huguier were in the pregnant. Its

* *See* Sänger, "Cent. für Gyn.," 1894.

† "Lectures on Diseases of Women," 4th edition, p. 182.

‡ "Mémoires de l'Acad. Nat. de Med.," t. xv., 1850.

conditions of origin are discharge, pruritus, dirt, and scratching. It is manifested by the presence of papules in the skin, and these papules may become pustules; the suppuration depending on the inoculation of pathogenic microbes. There may be only a few papules, or they may be so aggregated

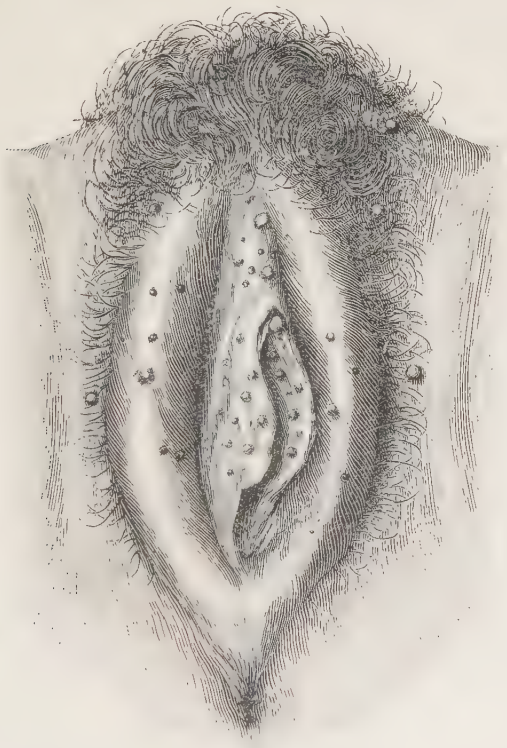


Fig. 159.—Follicular vulvitis affecting skin of vulva. (*After Huguier.*)

together that the whole labium becomes swollen, red, and granular, covered with sticky, offensive secretion, and isolated papules and pustules are seen around on the labio-crural fold and the mons veneris. Such severe inflammation as this is produced by, and accompanied with, intense pruritus and scratching; hence in such cases there are pustules. There may be many pustules, and the tops of them may be scratched off, leaving little pitted ulcers.

The condition is then a general dermatitis of the vulva, in which the initial lesion cannot be identified, unless it can be inferred from lesions on the adjoining skin. The disease has no regular course. It continues as long as the causes which gave rise to it continue.

This follicular inflammation may accompany eczema, the scratching induced by eczema inflaming the follicles. Both diseases lead to the same general dermatitis of the labia. The initial lesions can only be made out by observing the less affected skin at the periphery of the inflamed part. It may accompany syphilis, and it is possible for inflamed follicles to be so inoculated by scratching that they become so many soft chancres. Huguier counted twenty-seven chancres in one patient.

Diagnosis.—The diseases from which this form of follicular vulvitis may have to be distinguished are the following:—(1) *Herpes zoster* of the labium. Here the disease affects *one labium* only. The crop of vesicles is preceded by pain, not by discharge and itching. It runs a definite course; the crop of vesicles dries up, and the symptoms subside. (2) *Ecthyma;* that is, pustules on the vulva produced by a condition of the patient's general health. Here the pustules on the vulva are not numerous, and there are pustules on other parts of the body. (3) *Chancre.* This is more difficult because syphilis may produce and be combined with follicular inflammation. The special seat of chancres is the mucous membrane around the vaginal orifice; that of follicular inflammation the skin of the labia. In folliculitis, different follicles will be seen in different stages of inflammation—some papules, some pustules, some little pitted ulcers made by scratching; soft chancres will be all in about the same stage. If a hard chancre, or condylomata, be suspected to co-exist, the bullet bubo in the groin will be felt.

The treatment of this form of follicular vulvitis must be on the same lines as that of eczema of the vulva.

2. The other form of follicular vulvitis, of which I have seen one case, consists in deep red spots, of about the size of a pin's head, scattered on the vestibule and inner surface

of the nymphæ. According to Robert,* these are inflamed mucous glands, and out of them a tiny droplet of pus can be squeezed (Fig. 160). He regards them as a result of gonorrhœa. In the only case I have seen gonorrhœa was probable, but

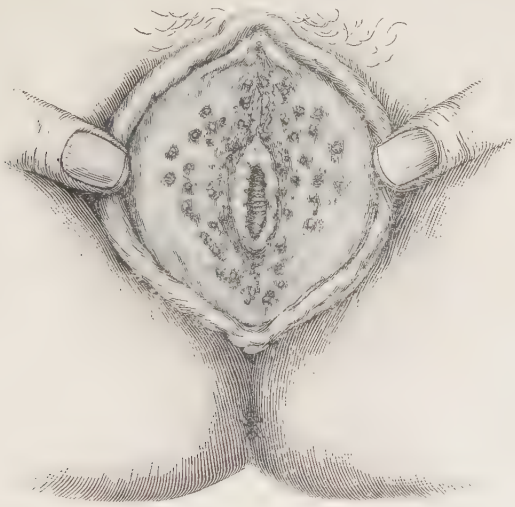


Fig. 160.—Follicular vulvitis affecting mucous membrane. (*From a drawing by Buryess of a patient of the author's.*)

not certain. The condition got well, but I am unable to assign the recovery to any form of treatment. Treat such a case by puffing a sedative, antiseptic, or astringent powder, such as dermatol, iodoform, zinc oxide, or thiol, on to the affected part; together with the treatment proper for gonorrhœa, if present.

Chancres.—The Hunterian or indurated chancre.—This chancre is not inoculable on the same individual. Hence, when lateral, it is on one side only. When on the labium, it often causes œdema: hence œdema of one labium only should suggest chancre. The common seat of chancre is at the vaginal orifice, for this is the part at which a breach of surface is apt to occur in sexual intercourse. When so situated, it is difficult to pick up the tissues around and feel induration. Hence it has been said that chancres in women are not indurated; it should have been said that the conformation of the vulva is such that

* Quoted by R. Barnes.

induration around chancres in women cannot easily be perceived. At the vaginal orifice a chancre looks like a little fissure with a coppery red border. When on the labium, it looks at first like a pimple. In this situation, induration is distinct. If the sore is on the free edge of the labium, it will be covered with a crust, and may seem not to discharge. If on the inner surface, it looks like a small abrasion with a coppery indurated areola round it. If in doubt, feel for the bullet-bubo in the groin corresponding to the chancre. If the chancre be median, the glands in both groins will be enlarged. It is said that the course of chancres in women is more protracted than in men, owing to the liability of the part to congestion. I know no good evidence of this. In case of pregnancy, it is said that a chancre becomes especially dark, of a port-wine colour.

Chancre may occur on the cervix uteri. Those who have made a point of looking for it say that it is far from uncommon.* I have seen and published one case.† Such a sore has not the uniform red granular appearance of an erosion, but is more mottled with yellow and ecchymosis here and there; and it has a broad zone of congestion round it which is not present with an erosion.

Soft chancres.—Soft chancres, like the hard, are commonly seated on or near the vaginal orifice and fourchette, and for the same reason. But being inoculable, they are often symmetrical, a chancre inoculating itself on the opposite side of the vulva. The virus may be carried by fingers, nails, or otherwise, to any part of the vulva, the vagina, or even cervix uteri. In the beginning a soft chancre looks like an ordinary pimple. When developed, it is a round sore with a surface of the colour of wash leather, and a red areola round it. If situated on an exposed part, where the discharge can dry, the chancre may be covered with a scab. If the inguinal glands are affected, it is not the hard bullet-bubo of syphilis, but enlargement with tenderness and perhaps suppuration. The diagnosis can be settled by inoculating the discharge on the thigh, but this is not necessary.

* Rasumow, "Vierteljahr. für Derm. und Syphilis," 1880.

† "Obst. Trans.," vol. xxvii.

Phagedæna.—In books written before antiseptic treatment was introduced, various lesions will be found mentioned which have been produced by what were called "phagedænic" chancres. Phagedæna is one of the diseases that arise when antiseptic care is not taken.* In the present day it only is seen in neglected subjects, and the surgeon is consulted, not the gynæcologist. There is a condition which has been called the "chronic chancroid of prostitutes"; and it is said to be sometimes attended with hypertrophy of the tissues.† Here I only mention it to say that it seems to me identical with so-called lupus of the vulva, or esthiomène.

Treatment of chancres.—The local treatment of hard and soft chancres alike consists in cleanliness and antiseptics. In the male soft chancres are often treated by the "abortive" method; that is, destroying them with strong caustics. But women seldom come for treatment early enough for this.

The part is kept clean by washing out the vagina night and morning with an antiseptic injection. Bear in mind that the presence of one kind of venereal disease does not protect the patient from another kind, and does not prove that the patient has not been exposed to the contagion of syphilis. Therefore the best antiseptic is a mercurial one: corrosive sublimate 1-2000.

To heal chancres the remedy is iodoform. The best way to apply this is to puff it on the sore with an insufflator. Ointments are not good; they may become rancid, and are dirty and disagreeable to apply. It is sometimes recommended to separate the labia with a piece of lint, that they may the better be kept clean. This is theoretically good advice; practically I think it causes more irritation than it prevents. If a hard chancre is present mercury is essential. The patient may have been inoculated with both viruses, that of the soft and that of the hard chancre. Therefore it is well in any kind of chancre to give mercury. If the chancre heals without bullet-bubo or secondary rash, leave off the mercury. Prescribe a pill of hyd. c. cretâ gr. j, pulv. ipec. co. gr. j (commonly known as Hutchinson's) twice a day. The

* For an account of phagedæna *see* James "On Inflammation," 1832, p. 490, *et seq.*

† Rollet, "Traité de Malad. Vén.," Paris, 1865.

Dover's powder prevents the slight laxative effect that the mercury would otherwise have. There is reason to think that by its use induration, or the occurrence of secondary symptoms, may be prevented.*

Syphilitic condylomata.—These patches are seen either on the skin, on or near the labia or the mucous membrane, or on both. They have been seen high up in the vagina and on the cervix uteri. They might perhaps be seen oftener in the latter situation were it not that in cases in which they might be expected the condition of the vulva generally makes examination with the speculum undesirable. On the skin they form flat or slightly convex broad-based discs. They often a little overhang the base. They are not pointed, like non-venereal warts. On the mucous membrane they form reddish or greyish-white patches, either disc-shaped, or of sinuous outline formed by the coalescence of discs. They cause discharge, which is often offensive. Condylomata are among the earliest secondary symptoms of syphilis. In cases left untreated they begin to appear about two months after contagion. When in doubt as to the diagnosis of such patches, look for the bullet-bubo in the groin, for a rash on the skin, and for ulceration of the tonsils.

Treatment.—The treatment is (1) local, (2) constitutional. (1) Local. Keep the parts dry and clean, and apply mercury. Let the patient use a vaginal injection night and morning of corrosive sublimate, 1-2000. After doing this, let her puff from an insufflator over the mucous patches a powder composed of equal parts of oxide of zinc and calomel. (2) The constitutional treatment consists in giving mercury.

Furuncle.—An ordinary boil occasionally forms upon the labium, but, occurring in this place, it differs not from a boil occurring elsewhere. In the beginning a boil may raise suspicion of chancre. The course of the sore place (speedy suppuration and discharge of a core of cellular tissue) will reveal its nature. The etiology and treatment of boils generally is beyond the scope of this work. The only local treatment required is to keep the part clean.

Lupus of the vulva, or esthiomène.—These are names

* *See* Hutchinson, "Allbutt's System of Medicine," vol. ii.

given to a disease peculiar to women, which consists in chronic ulceration with fibrous overgrowths. The name "*lupus*" was applied to it because it was thought identical with common lupus, such as is seen in the face and elsewhere, it being supposed that the disease, when affecting the vulva, was so modified by the local conditions of warmth and moisture as to present peculiar characters. This view of its pathology was adopted by Matthews Duncan. But it is not universally accepted. Mr. Jonathan Hutchinson says, "all dermatologists would repudiate the name lupus as inapplicable" to this form of disease. Mr. Hutchinson thinks it a remote form of syphilis, due partly to syphilis, partly to local irritation. Dr. Thin, who examined Dr. Duncan's cases, says the histology is not that of lupus. He thinks it a disease *sui generis*. I see in it no resemblance to lupus. In most cases there is no clear evidence of syphilis. Whatever the pathology of the disease, it is a morbid condition which is peculiar to women, and has definite characters. I think it better to adopt a name that implies no theory and involves no confusion. I therefore prefer the name "*esthiomène*" (ἐσθιόμενος, eating), given to the disease by the French observers who first described it.* The best description of the disease has been given by Matthews Duncan.† The main features of the disease are two—ulceration and overgrowth (Fig. 161).

Ulceration.—Ulceration is present at some time in all cases, but the disease may be seen before ulceration has taken place, or after it has healed. Ulceration may be present at one place and overgrowth at another; or the hypertrophied parts may be ulcerated. The ulceration most often affects the vulva, the labia, clitoris, vestibule, and urethral orifice; but it may spread to the mons veneris, thighs, perineum, anus, and rectum. The ulceration may be continuous with the rest of the disease, or may be separated from it by strips of healthy tissue. There may be one ulcer, or more than one. The surface of the ulcer is generally pale. It may be granulating or smooth, according to whether it is healing or not. Its margins may be thick and fibrous or overhanging, and its base indurated or

* *See* Huguier, "Mém. de l'Acad. Nationale de Médécine," vol. xiv., 1849.

† "Obs. Trans.," vol. xxvii.

not, according to the degree to which the parts which the ulceration is attacking are the subject of hypertrophy. It secretes pus. Such ulcers have been known to bleed spontaneously and profusely, but this I have not seen. The ulcers are not, as a rule, very tender; women suffering from

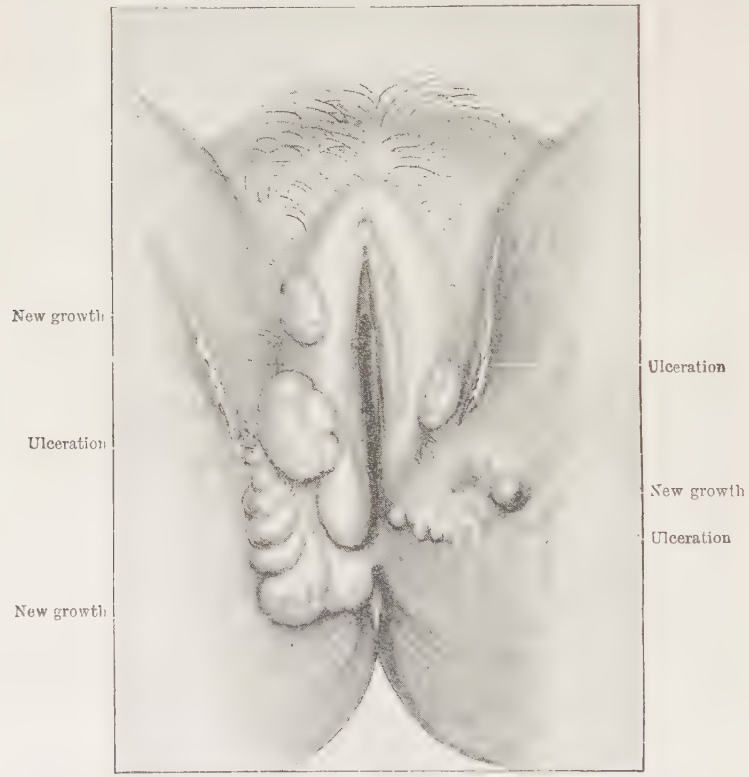


Fig. 161.—"Lupus" of the vulva, or esthiomène. (*After Matthews Duncan.*)

this disease have been known to cohabit with their husbands and bear children. The ulceration may be extensive and superficial; it may extend down into the subcutaneous tissue, forming a pit; it may undermine skin, or it may perforate a labium or the recto-vaginal septum. It attacks skin, mucous membrane, and subcutaneous soft tissues, but never bone, which latter fact is one of the reasons for

doubting the syphilitic nature of the disease. The ulceration spreads by slow disintegration of tissue, not by sloughing, and in time it stops spreading and heals. It may spread in one direction while it is healing in another. We know the laws neither of its extension nor of its healing. Its healing is the feature which distinguishes this disease from cancer. Ulcers formed by the breaking down of cancer never heal anywhere, although wounds formed in the partial removal of cancer—that is, in tissue only slightly infiltrated by cancer growth—may do so. The ulceration of esthiomène may attack the urethra and widen it. I have seen it so enlarged as to admit the thumb. In cicatrisation it may cause stricture of the urethra, and lead to retention of urine; this I have seen. I know not that the disease ever attacks the bladder nor that it ever affects the uterus. Ulceration of the uterus and upper part of the vagina (corroding ulcer of the uterus), and simple ulcer of the vagina, of a pathology hard to explain, are occasionally seen, and Duncan implies that he thought these were of the same nature as esthiomène. We know so little about the nature of esthiomène that this view does not instruct us much, if correct.

Besides ulceration—that is, loss of substance replaced by granulation tissue—there may be in esthiomène superficial excoriations where parts are exposed to friction.

Duncan described small, dark-coloured tender spots as "lupus minimus." But I know not that there is any constant relation between these and the non-tender ulcerations and hypertrophies of esthiomène. I have spoken of these tender spots elsewhere.

The overgrowths.—With the ulceration there goes overgrowth—thick fibrous indurated lumps. Duncan thought that these overgrowths were not an essential part of the disease, but this was because he included under the term "lupus" the small red spots which he called "lupus minimus." I apply neither the name lupus nor esthiomène to these spots. In esthiomène there is always more or less overgrowth. There may be much ulceration and little overgrowth, or much overgrowth and little ulceration; indeed, as the same spot can hardly present at the same time

ulceration and overgrowth, there is some antagonism between the two. Duncan thought that, taking all cases together, the amount of tissue destroyed by the ulceration of this disease was greater than that produced by new growths. The question is difficult to test, but he was probably right. He thought that hypertrophy preceded ulceration. I know not whether it does so or not, and therefore accept his statement. The overgrowths affect the same parts as the ulceration—labia, clitoris, hymen, fourchette, urethra, anus, rectum. They consist in fibrous induration of the skin or mucous membrane and the subcutaneous tissue. It is not symmetrical, although there may be masses of overgrowth on both sides. The overgrowth may be a general fibrous thickening of the part affected, so that, though enlarged, it (*i.e.* a labium or the clitoris) preserves its natural shape; or it may consist in round fibrous nodules or groups of nodules. The overgrowths are sometimes of a dead white colour, sometimes of the natural colour of the part, sometimes brown, sometimes bluish; if inflamed, they may be deep red. Unless inflamed, the overgrowths are not tender.

With esthiomène there often goes vaginitis, with purulent discharge; less frequently there are urethritis and cystitis.

Strictures from esthiomène.—The overgrowths may lead to contraction of the vagina or urethra—*i.e.* stricture. There is a stricture of the rectum well known to surgeons the origin of which has been much discussed by them—the simple or tubular stricture. It is known that in most cases there is no evidence of syphilis, and that the disease is almost confined to women. It is produced by an overgrowth of fibrous tissue in the lower part of the rectum, making the wall of the rectum rigid and its lumen narrow. Surgeons have invented theories to account for it. I do not know its cause, for I do not know the cause of esthiomène. But I take this stricture to be the same disease—one peculiar to women—which when it affects the vulva is called esthiomène. Disease of the vulva and of the rectum often go together. For the rectum to be affected without the vulva is commoner.

Differences from elephantiasis.—Esthiomène is not the same thing as elephantiasis. Elephantiasis is an enlargement

due to blocking of the lymphatics by the filaria sanguinis hominis. In the beginning of it the filariæ can be found in the blood, but by the time the great enlargement which we call elephantiasis has taken place, the lymphatics are so blocked that the filariæ cannot get into the blood, and so they are not to be detected. In elephantiasis there is simply solid fibrous enlargement; there is no ulceration except that accidentally due to friction or pressure; and the enlargement is of the whole part, not of isolated lumps and nodules. Nor is the enlargement of esthiomène simply the œdematous swelling which results from dermatitis and scratching. This latter is symmetrical, and goes away when the dermatitis is cured.

Prognosis.—I know not whether this disease tends to spontaneous cure. I have never left one untreated to see. It is very slow in progress. The ulcerations sometimes heal without treatment; but the presence of the overgrowths seems, as a rule, to keep up the ulcerative process.

Treatment.—Much improvement can always be effected, and often the patients can be cured; but whether they remain well without relapses I know not. The first thing in treatment is to remove the overgrowths. This is best done by cutting through their bases with Paquelin's cautery. If healthy tissue is cut through, the wounds heal well. Their healing, and that of the ulcerations, is favoured by cleanliness and the use of alterative applications. These ends are secured by the use of vaginal injections—zinc chloride, gr. $\frac{1}{4}$ ad $\overline{3}$j; boric acid, a saturated solution; peroxide of hydrogen (sanitas), &c.; and the application, with an insufflator, of powders: iodoform, dermatol, thiol powder.

Cancer of the labium.—The proportionate frequency of cancer of the vulva to cancer of the uterus is not more than one to thirty or forty. Cancer of the vulva begins either in the clitoris or the labium. Cancer of the labium is rare in young women; it occurs generally in those advanced in years. It begins as a small hard pimple, usually on the inner and lower part of the labium. From a pimple it becomes a hard raised nodule, often of a rather paler colour than the skin around, because less vascular, the vessels being compressed by cell growth. At this stage it causes so little

trouble that it seldom attracts attention, and therefore we have no knowledge as to its rate of growth at this early stage. Then it begins to break down; that is, to ulcerate. At this time, or shortly before, it begins to cause a little smarting pain and itching. The latter is often the first symptom. When ulceration has begun, there is discharge and more pain. If seen at this time, there is an ulcer with a hard border excavated internally and swollen externally, and a hard, uneven surface. If the ulcer is large, its surface does not exhibit the uniform colour of a healthy granulating sore, but presents here dark spots from small ecchymoses and there greyish or whitish spots of sloughy tissue; and the discharge is brownish or greyish, and offensive from its containing bits of decomposing tissue. As the cancer advances, it spreads forwards, backwards, upwards, and outwards; but usually more rapidly along the mucous surface towards the vagina than outwards over the skin of the labium. It rarely affects the opposite side. Sooner or later the glands enlarge and ulcerate, but they are not usually implicated until the disease on the labium has advanced far enough for easy diagnosis.

Duration.—We do not know how long it may last before ulceration. When ulceration has begun, the disease advances with steadily increasing rapidity, and, according to Hildebrandt,* death takes place within two years from the occurrence of ulceration.

Modes of death.—Death takes place from exhaustion, aided by haemorrhage. From the situation of the disease it results that secondary complications bringing about death, such as occur in uterine cancer, seldom are present in cancer of the labium.

Diagnosis.—The diagnosis of advanced cancer of the labium is easy. The induration around the ulcer, its excavated edge, the signs of breaking down on its surface, and the enlargement of the glands, leave no doubt as to the nature of the disease.

In its beginning cancer might be taken for a *chancre*, or *vice versâ*. A *soft* chancre can hardly be taken for cancer; its flat wash-leather like surface, with an inflammatory areola

* "Deutsche Chirurgie" (Billroth and Lücke).

round it; the fact that it is often multiple, and has reproduced itself on the corresponding point of the opposite labium, characterise it well enough. If there be doubt, inoculation of the discharge on the patient's thigh will produce a similar sore and make the matter clear. But a Hunterian chancre, like an early epithelioma, may begin as a small hard pimple. The chancre is generally seen in young women, epithelioma in the old. This will point you out the probability; but you should never let probability decide the question. If a chancre, you will feel the bullet-bubo in the groin; while in a very early cancer there will be no glandular affection. The administration of mercury will make the chancre heal, but will have no effect on cancer. If the supposed cancer is no bigger than a pimple, you may safely wait long enough to make the trial.

Doubt may arise whether ulceration in the labium is cancer, or esthiomène. This latter disease presents ulceration with fibrous overgrowths. But the growth is not a zone of hardening round the ulcer and nowhere else. It consists of masses of hard pale bluish or pink fibrous tissue, it may be near the ulcer, but it may be also at other parts of the vulva or in the rectum. Its ulceration is quite superficial, not invading the deeper parts; its colour is the healthy red of a granulating wound, not mottled with bits of sloughy tissue and dark spots from the giving way of small vessels. In esthiomène, although extensive, the inguinal glands are not enlarged and the body does not waste. Lastly, if the case be watched, the fibrous overgrowths cut away, and the ulceration treated with antisyphilitic remedies, such as mercury and iodoform, the ulceration will heal; but these drugs have no effect in cancer.

Treatment.—The only treatment of labial cancer is its removal, with a broad zone of healthy tissue round it, and with the lymphatic glands in the corresponding groin. There are two ways of doing this: (*a*) the knife, (*b*) the Paquelin cautery-knife. (*a*) If the knife be used, first scrub the skin and mucous membrane near the growth with a strong antiseptic solution (sublimate, 1-2000), and destroy the surface of the growth with the actual cautery, lest a cancer fragment should get implanted

on the wound surface. In cutting, aim not at making incisions which will come together nicely, but at getting a large margin of healthy tissue away with the growth. The tissue of the labium is loose and vascular, and, as a large gap in it is left, the conditions are not favourable to union by first intention, however carefully the wound is stitched. (*b*) The Paquelin cautery, which prevents inoculation by charring the whole wound surface, is a quicker and simpler way of getting away the cancer with precaution against inoculation. True, the wound will heal slowly by granulation, but probably it will have to do this in any case.

Remove the glands in the groin by cutting through the skin over the glands, enucleating the glands by the fingers and the handle of the scalpel, and then inserting a small drainage-tube and stitching up the wound. Although after such an operation relapse may take place, yet the patient will get a period of freedom from symptoms, and her life will be lengthened.

Cancer of the clitoris. — Cancer beginning in the clitoris is in my experience more frequent than cancer beginning in the labium. As the clitoris is highly sensitive and exposed to contact, the disease generally attracts attention early. It presents itself as a bright red hard warty growth, with edges overhanging its base, looking something like a strawberry. I know not of any conditions which favour the development of cancer in this place. Cancer of the clitoris is less unfavourable than many forms of cancer, because it is usually found out soon enough for easy removal. The best way of removing it is to cut it away with the knife, taking away also a large margin of healthy tissue. The inguinal glands on both sides should also be extirpated, by cutting down upon them with the scalpel and then enucleating them with the fingers and the handle of the scalpel.

Melanotic sarcoma.* — Almost all melanotic tumours occur on parts which are naturally pigmented. Melanotic

* *See* Haeckel, "Arch. für Gyn.," Bd. xxxii., for a case, and an account of the literature of the subject; and Lewers, "Obst. Trans.," vol. xxviii., for a case; also Kalmlow, "Arch. für Gyn.," Bd. xl.

sarcoma affects the vulva oftener than the higher parts of the genital tract. Of melanotic tumours, only about four per cent. occur on the vulva. The labia majora, perineum, and mons veneris are the parts of the vulva most affected. Most cases are in old women. The disease is rare.

The disease attracts attention sometimes by the swelling that it produces, sometimes by hæmorrhage, sometimes by discharge and itching. When examined the tumour is a bluish black, reddish black, or greenish black, circumscribed firm swelling. It grows quickly, and soon travels along the lymphatics (which may sometimes be felt and seen as black cords) to the nearest lymphatic glands; which, when the vulva is affected, are the inguinal. The diagnosis is easy; there is no other tumour which resembles it except, says Haeckel, hæmorrhagic sarcoma. But melanotic sarcoma only differs from hæmorrhagic sarcoma in a minor point, viz. its colour, not in any important feature. One case reported under this title proved on better examination to be chorion epithelioma.

Treatment.—The only possible treatment is to remove the tumour. Often after this has been done, recurrence in internal organs takes place soon. But cases have been published in which, after removal, patients have remained well for years. In one reported case, in which the inguinal glands were affected and were removed with the tumour, the patient remained well for eleven years. Whether these are really cures of sarcoma, or only instances of histological mistakes, a tumour having been taken for sarcoma which was not such, I know not. There is no other effective treatment. I have elsewhere referred to the treatment of sarcoma by toxins. This form of sarcoma is one of the forms of malignant disease upon which the toxin has the least influence; operative treatment should therefore never be postponed that toxins may be tried. If the toxin have any power of checking the growth of a large tumour, it would be expected to have more power when the growth is small. The proper time to use it, if it be used at all, is when the first signs of recurrence after removal by operation appear. Arsenic may be given, but expect not much from it.

Noma.—This rare* morbid process when it affects the vulva is like that which more commonly affects the cheek; hence its alternative name of "*cancrum oris.*" As it comparatively seldom affects the vulva, detailed discussion of its pathology is out of place in this work. It occurs in children who have been debilitated by infectious, febrile, or wasting diseases, such as measles, scarlatina, typhoid, typhus, phthisis, &c. It almost certainly depends upon a microbe, but as yet we know not what. It begins as a dark livid red hard swelling of one labium only. This first presents vesicles, which break down into dirty grey or bluish red ulcers; and the ulcerated surfaces become a yellowish grey or greenish black layer of gangrene. This gangrene may destroy the whole labium, and extend to the vaginal orifice and the mons veneris. The prognosis is very unfavourable. The treatment consists in the free destruction of the whole of the sloughing surface with the actual cautery, and subsequent frequent washing of the parts with an antiseptic solution, such as 1 in 40 of carbolic acid.

Acute gangrene of the vulva in adults.—This is rare. Cases may be grouped into four classes. (1) Those occurring in the course of acute specific disease. Cases have been reported occurring in the course of smallpox and of typhus; and I presume it might follow other similar diseases. (2) Those occurring as an epidemic puerperal disease. Several epidemics of it were reported in pre-antiseptic times. It was not gangrene from injury in delivery, for it affected not solely the parts specially liable to injury during labour, and it occurred after easy as well as after difficult labour. Thanks to Lord Lister, these epidemics are now of historical interest only. (3) An acute inflammation of the genitals, arising independently of contagion, and going on to gangrene, occasionally occurs. The process is bilateral, and ends in the production of a large black slough, after which it spontaneously ceases. It may destroy the skin of the labia, perineum, margin of anus, and lower part of vagina and urethra. We know nothing as to its cause, but as it begins with febrile symptoms, it seems as if the sloughing were

* For an account of noma, *see* Kinder Wood, "Med. Chir. Trans.," vol. vii., 1816.

due to the intensity of the inflammation. It is probably due to some poison, and the bilateral distribution of the change points to the poison being in the blood. I know not of any case that has been treated before the formation of the slough. After this has taken place, the inflammation spontaneously ceases, and all that is needed is to keep the part clean; and, if healing be slow, to apply stimulants, such as tr. benzoin co. (4) Rapidly spreading gangrenous erysipelas, affecting skin and cellular tissue, and differing not from that seen in other parts of the body. As this is not peculiar to women, I do not describe it here.*

* For an account of these forms of disease, *see* a paper by the author. "Obst. Trans.," vol. xxv., 1884.

CHAPTER XXXVI.

SWELLINGS OF THE VULVA.

Most of the conditions described in Chapter XXXV. produce slight swelling of the vulva as well as soreness. But the ulceration or inflammation is the more conspicuous change. In some of the conditions I have now to describe there is also soreness, but in them swelling is that which more attracts attention.

Warts of the vulva.—This disease begins as a few scattered outgrowths, usually when first seen about as big as a millet seed, on the mucous membrane near the fossa navicularis. If neglected, they grow, and more come. As they grow they form pointed outgrowths, not flat patches like condylomata. When large and many they are not limited to the fossa navicularis, but grow mostly on the labia, but also on the clitoris and mons veneris, the genito-crural fold, the perineum, and within the vagina. Such warts have been seen forming a cauliflower-like mass as big as a child's head. Although the general outline of the mass is convex, yet it consists of lobules formed by blunt-pointed outgrowths. Where the surface is exposed its surface gets dry, but where the secretions cannot evaporate it is soft and moist. The secretions retained in the sulci between the warts decompose, and become offensive. There is white or yellow discharge, but not bleeding. From this feature, viz. a copious foul discharge, Emmett has called the labial swelling formed by a mass of warts, "*oozing tumour of the labium*" (Fig. 162). The outgrowths are usually roughly symmetrical, for the conditions which favour their growth are present equally on the two sides. Vulval warts grow faster during pregnancy, and retrograde during the puerperium. Microscopically examined, their structure has been found to be that of an overgrowth of the papillæ of the skin.

Etiology.—This disease occupies an intermediate place between venereal and non-venereal diseases. Warts are

generally associated with gonorrhœa; and they do not occur in women who are both chaste and clean, nor in those who, when they get venereal disease, promptly seek treatment. But they are seen occasionally in children, and in young

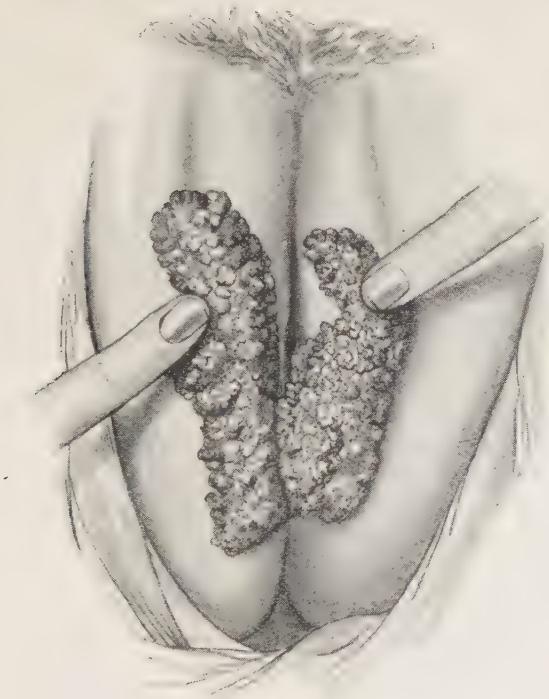


Fig. 162.—Oozing tumour of labia. (*After Emmet.*)

women whose chastity there is no reason to doubt. They are not inoculable. They are met with chiefly in young women of the lower classes; for women of mature years, and of higher social position, have generally learned or been taught the advantages of local cleanliness.

Treatment.—When the warts are small, it will be enough to keep the part very clean, and as dry as possible, and if this is not enough, to touch the individual warts with caustic. Prescribe a vaginal douche of zinc chloride, gr. v. ad Oj, to be used twice or thrice daily. Tell the patient, after using it, to hold the labia apart with one hand, and with the other

puff from an insufflator oxide of zinc over the whole mucous membrane of the vulva. Warts that are small and few will dwindle with this treatment. If some remain obstinate, touch them with either nitric acid or carbolic acid, applied with a pointed glass rod.

If they are too large for this, the only thing is to cut them off. This ought *not* to be done by amputation of the labium. Put the anæsthetised patient in the lithotomy position. Cut off the warts with scissors curved on the flat (Fig. 163), beginning at the outskirts of the main mass, so that you may the better see where the warts sprout from the healthy skin. The tissue of the warts is less resistant

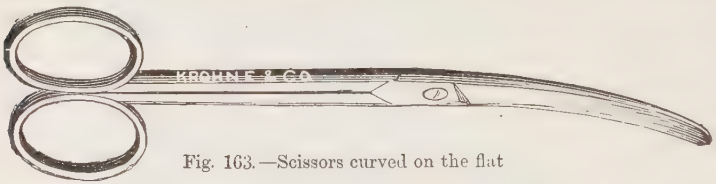


Fig. 163.—Scissors curved on the flat

than that of the skin; this fact and the eye are the best guides. If the warts are large, bleeding may be copious. Where you see a spouting vessel, seize it with forceps and tie it. Most of the bleeding will be oozing, which can be stopped by pressure. Let pads of iodoform gauze be held on the oozing surface, and put outside these pads of wool on which firm pressure can be made by a T bandage. Afterwards let the parts be kept very clean and stop the discharge in the ways described above.

If the patient be pregnant, especially if in the second half of pregnancy, it is better not to meddle with the warts until involution after delivery is complete: (1) because the great vascular development of pregnancy will make the bleeding profuse; (2) during the lying-in period the warts will get smaller.

Bartholin's gland.—This gland has also been called, from its situation, the "*vulvo-vaginal gland.*" It is situated behind and outside the vagina, in the triangular space at the side between the vagina and the rectum, and is about two-fifths of an inch above the hymen. It is about half an inch from the ischium, about an inch from the free

border of the labium majus, and about two-fifths of an inch from the genito-crural fold. In appearance it is more like the lachrymal gland than any other. It varies in size and shape in different women, in the same woman at different ages, and on the two sides. It is largest during the years of sexual activity. It is flattened from within outwards, convex on its external, flat on its internal surface. It is separated from the vagina by the deep perineal fascia, and therefore, when inflamed, it never bursts into the vagina. Its outer and anterior part is in relation with the fat of the ischio-rectal fossa; behind and internally it is in relation with branches of the pudic artery, nerve and vein. The excretory duct of Bartholin's gland runs from below upwards, from behind forwards, and from without inwards; it is little more than half an inch long, and opens in the angle formed by the junction of the hymen with the vaginal orifice. In health its opening is formed by a falciform valvular fold of mucous membrane; and it is not easy to pass a probe along it. Its secretion in health is tenacious, colourless, and transparent. In function, Bartholin's gland seems to be related to the clitoris, and under the influence of the ovary, for its secretion is poured out under sexual excitement.

Etiology.—Disease of Bartholin's gland has not been seen before seventeen, nor after forty-five, and is not common after thirty. When seen after this age, it is generally found that disease has been long present. Such disease occurs therefore in the years during which the sexual functions are most active. The causes which seem to provoke it are incidents connected with the sexual functions—the accidents of pregnancy and labour, excessive or violent intercourse or attempts at intercourse, gonorrhœa, masturbation. Huguier states that he has frequently seen inflammation of Bartholin's gland rekindled by sexual excitement, after it had been made quiescent by treatment. Such inflammation, he says, is more frequent in summer than in winter.

Hypersecretion. — The discharge which women call "whites" is sometimes partly furnished by Bartholin's glands. They are sometimes large, and secretion can be squeezed out of their ducts. Erotic dreams are often accompanied by discharge, and sexual desire is attended with moisture

of the vulva, which it is believed comes from these glands. In inflammations of the vulva, secretion of these glands is provoked. Such hypersecretion is not of great moment, for in English practice women seldom apply for treatment for discharge simply of this kind; but the observations of Huguier are too numerous to be passed over as not corresponding to facts. In some cases, in which great violence, or gonorrhœal infection, has set up the disease, the secretion may be purulent; with this there may be itching and soreness of the vulva. Thus we have cases intermediate between hyperæmia with increased secretion, and abscess.

The treatment of discharge of this kind consists in the discovery and removal of the cause, if possible; the cure of gonorrhœa; the leading of a chaste and sober life; the keeping the vagina and vulva clean; and the relief of hyperæmia and irritation by sedative douches, such as borax, boric acid, or acetate of lead, for the vagina; and dusting the vulva with a sedative powder, such as boric acid or dermatol. Remedy also any defect in the general health, such as anæmia or insomnia, by appropriate treatment such as I have described elsewhere.

Enlargement of Bartholin's gland.—The causes which produce hypersecretion from Bartholin's gland lead also to its enlargement. The enlargement may be big enough to swell the labium visibly; or it may be felt by taking the hinder part of the labium between the thumb and forefinger. It may be due to one of four conditions:—

1. Inflammation, the gland being swollen, just as every inflamed gland becomes swollen.
2. Fibrous induration.
3. Cyst formation.
4. Abscess.

1. **Inflammation.**—The gland is enlarged and tender, but it feels solid, and may feel lobulated. It is not elastic or fluctuating. Under the influence of rest it gets smaller and less tender. Sexual intercourse is painful, and makes the condition worse, as does local violence of any kind.

2. **Fibrous induration.**—Huguier relates a case in which, with a cyst of the duct the gland was converted into a mass

of fibrous tissue an inch long by half an inch in thickness. This change is rare; but I have seen it.

These morbid states are probably ulterior consequences of the long-continued action of those causes which promote hypersecretion.

3. **Cysts of Bartholin's glands.** — Bartholin's gland may have its duct stopped up, and thus its secretion retained, and the gland converted into a cyst. Huguier* divided these cysts into two kinds. (1) Those formed out of the excretory duct. These alter the form of the external genitals more than the other. They are in the lower third of the affected labium, and bulge it out, so that the labium seems divided into two parts. They are spindle-shaped while small, and when larger become rounded. (2) The second group are those formed out of the gland itself. These are deeper-seated, and from the beginning are rounded. As they get larger they extend backwards by the side of the vagina towards the rectum. Exceptional cases have been recorded, in which such cysts have extended upwards towards the urethra, or towards the pelvic brim; this I have never seen.† The cyst contents are either yellowish and tenacious, of the consistence of albumen, or thick and brown (from admixture of blood), or purulent. The usual size of such cysts is about that of a cherry. Exceptionally they are larger, up to the size of a hen's egg. Cysts larger than this are rare. The closure of the duct by which such cysts are produced is generally attributed to antecedent inflammation. This is often gonorrhœal; therefore labial cysts and abscesses, like vulval warts, are often seen in prostitutes.

Diagnosis.—These cysts are in most cases easily diagnosed from their shape, size, and elasticity or fluctuation. *Fatty* or *fibrous tumours* of the labium do not fluctuate, are nearer the surface of the labium than cysts of Bartholin's glands, and are not painful. Cysts of Bartholin's glands differ from *hydrocele of the canal of Nuck*, in that the latter is situated in the anterior half of the labium majus, and cannot be pressed farther downwards, nor can it be

* "Mém. de l'Acad. de Méd.," 1850, t. xv.

† *See* Kleinwächter, "Arch. für Gyn.," Bd. xxxii.

reduced; from its upper pole a band can be felt running up to the external inguinal ring; as its contents are watery, it is translucent. A large Bartholin's cyst, extending up in a manner which has been described, though it occurs very rarely, might possibly be thought a *unilateral hæmato-* or *pyo-colpos*. But pressure in the upper part of the vagina would in the latter condition communicate an impulse to the lower part of the swelling; but not so if the swelling were a cyst of Bartholin's gland. In unilateral hæmato-colpos there would be a history of menstrual pain, which might be present, but is more likely to be absent, with a Bartholin's cyst. A *hernia* could only be confounded with a Bartholin's cyst by careless examination.

Treatment.—The best treatment is excision. If the cyst is merely incised, and its contents are let out, the incision will close and the cyst refill. If a large piece is cut out of the cyst wall, and the wound carefully dressed daily, its edges may cicatrise without closure of the opening, and cure will be obtained. But unless the dressing is carefully done the wound may close and the cyst refill. Security against relapse is only attained by dissecting out the cyst. When the cyst is small, this is easy. If the cyst be large, it is difficult; there is likely to be much bleeding from deep-seated vessels; there is risk of wounding the rectum; and the skin of the labium may have to be dissected off so extensively that, being deprived of blood supply, some of it may slough.

Operation.—Put the anæsthetised patient in the lithotomy position. Shave the labia, wash out the vagina, wash the external parts with soap and water, and then sponge with sublimate. These things are best done while the patient is anæsthetised, for they are disagreeable to her. Make an incision through the skin along the whole length of the tumour, over its most prominent part, and parallel with the labium. The skin is usually movable over the tumour, some cellular tissue intervening. Cut down to this cellular tissue. Then with the handle of the scalpel separate the tumour from its surroundings. Take plenty of time, and be gentle. If you proceed roughly you will rupture the cyst, and then it will be more difficult to get it out The handle

of the scalpel will not be enough to separate the tumour behind. When you get to the back of the tumour, you must use the edge, and there will be some bleeding. Tie bleeding vessels as they are wounded. When you have got out the

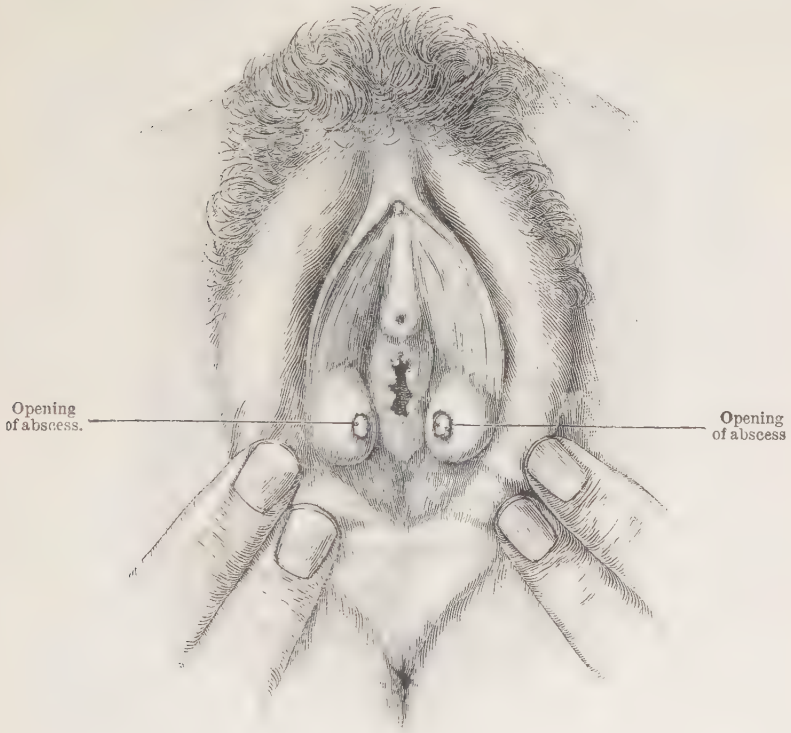


Fig. 164.—Abscesses in the ducts of Bartholin's gland. (*After Huguier.*)

tumour, wash the wound cavity out with 1-2000 sublimate solution, put in a drainage-tube at its lower part, and then bring together with stitches the raw surfaces out of which the tumour has been taken. Dust the wound with iodoform and see that it is kept clean.

4. **Abscess.**—Just as there may be a cyst either of Bartholin's gland or of its duct, so an abscess may form either in duct or gland. (A) *In the duct.* These abscesses are often bilateral. They never exceed the size of a very small walnut. They are seated in the thickness of the lower

part of the labium minus. They form quickly; in ten or twelve hours the mucous membrane becomes tense, and there is redness around the swelling. They open spontaneously within at most two or three days on the inner surface of the labium minus, never on the outer surface. (Fig. 164.) (*a*) The opening may be formed simply by the duct becoming again patent. In this case the swelling may take three to seven days before it completely subsides, for the pus does not escape freely. A probe put into the opening will be found to enter a smooth-walled rounded cavity immediately beneath the mucous membrane. The pus is more viscous than ordinary pus, for it is mixed with the secretion of the gland. As the cavity is incompletely emptied, recurrence of suppuration is apt to take place after the part has apparently got well. (*b*) The pus may escape partly by the duct, partly by bursting of the cyst wall. In this case the closure of the cavity is quicker; it is usually well within three days. But as the discharge can escape through the duct as well as through the abnormal opening, the latter sometimes heals, and then recurrence of suppuration may take place. (*c*) The abscess may open by its wall giving way and not through the duct. As the wall is very thin, the opening is usually large, half an inch or so in diameter. The symptoms are relieved immediately. The exposed lining membrane of the duct becomes like the mucous membrane of the rest of the vulva. The opening does not close, and no recurrence of abscess in the duct does recur, although the patient may get an abscess in the gland itself.

The depressed cavity left by the bursting of such an abscess may be, and has been, taken for a *chancre*. But a chancre does not form such a deep cavity, nor does its cicatrix: and the edges of a chancre are not raised.

(B) *In the gland.* This is usually on one side only; if the two sides are affected, it is generally at different times. It begins with sensations of heat, itching, pain, and soreness of the labium, which then swells and becomes tender. The principal seat of pain is at the posterior part of the labium, about an inch or more in front of and outside the anus; and it radiates thence backwards, forwards, and outwards. The

larger the swelling, the closer it approaches the ischium. The inflammation sometimes subsides without suppuration, but more often goes on to abscess. When an abscess has fully formed, it forms a swelling in size from that of a nut to that of a small pear, rarely larger. (Fig. 165.) It extends backwards farther than the labium, but never as far as the anus. It bulges more internally towards the opposite labium than externally, so that it effaces folds of mucous membrane; and has been known so to occlude the vagina as even to cause retention of secretion in the canal. On palpation, it is found that the upper two-thirds of the labium, though perhaps slightly swollen, yet present no marked alteration to the touch; while the posterior third is bulged by a rounded, definitely-bounded tender swelling. As the pus is contained within the gland, far from either a mucous or skin surface, the swelling remains firm and hard for two or three days, and then gradually begins to fluctuate, the fluctuation being earliest and most distinctly felt on the inner aspect of the swelling. There is neither redness nor superficial tenderness of the skin; these signs of inflammation are only seen on the inner aspect of the labium. The abscess bursts on the inner surface of the labium, never on its outer surface or its free border. When the abscess has burst, a probe put into its cavity passes in a direction towards the ischial tuberosity for about an inch; it enters a cavity with an anfractuous wall, and its extremity is felt to be separated from the vagina

Fig. 165.—Abscess of Bartholin's gland. (*After Huguier.*)

by a considerable thickness of firm tissue. In some rare cases in which abscess in the gland has been preceded by abscess of the duct, the pus may escape by the duct; such abscesses are not so large, and discharge sooner, but they are slower in healing. Abscesses of Bartholin's gland never open into the rectum, nor does the pus they contain ever have a fæcal smell. When the pus has found vent, the symptoms are at once relieved, and the abscess closes in four or five days. The average duration of the whole illness is between two and three weeks. The treatment of a suppurated Bartholin's gland is to remove it, in the same way as a cyst of the gland. If this is not done, suppuration will recur, time after time.

Abscess of the gland thus differs from abscess of the duct in being (1) more deeply situated, (2) slower in formation and in pointing, (3) larger, (4) more painful, (5) seldom discharges by the duct, (6) when it bursts the opening is not so large, (7) its interior is anfractuous, not smooth and regularly ovoid.

Certain complications may coexist with abscess of Bartholin's gland. (1) Inflammation of inguinal lymphatic glands; (2) inflammation of the mucous membrane, skin, or cellular tissue of the vulva beyond the situation of Bartholin's gland; (3) vaginitis. It is more probable that these complications are associated with inflammation of Bartholin's gland because they are results of a common cause than that they are its effects.

Other kinds of suppuration in the vulva.—Abscess of the labium due to inflammation of Bartholin's gland is commoner than that from all other causes put together. There are a few other rare causes of suppuration in or near the labia.

1. **Furuncle.**—An ordinary boil may appear on a labium majus. (A boil means inflammation produced by a small slough of cellular tissue). It affects the thickest part of the labium, where there is most cellular tissue, and points on the free—that is, the hairy—surface. The course of such boils does not differ in any way that I know of from that of boils on the nucha or on the buttock.

2. **Erysipelas (so-called) of cellular tissue.**—Spreading

suppurative inflammation of cellular tissue, due to the entry of a micro-organism into the tissues, used to be occasionally seen in pre-antiseptic times. It was not common, because the genital organs are but little exposed to traumatism. The general use of antiseptics has made spreading inflammation of cellular tissue less common than it used to be. Inflammation of this kind affecting the labium does not differ from similar inflammation of the same kind elsewhere. It differs from suppuration of Bartholin's duct in that it spreads, so that it soon ceases to be limited to the labium.

3. **Abscess of rectal origin.**—These are the abscesses which most resemble abscess of Bartholin's gland. They arise often in connection with organic disease of the bowel, such as hæmorrhoids, fissure, stricture, &c. Symptoms connected with the rectum, such as pain in defæcation, hæmorrhage, discharge, are the first symptoms, and precede the abscess. These abscesses are slower in bursting than is abscess of Bartholin's gland. The swelling formed by such an abscess is less distinctly limited; it does not form a definite globular or ovoid tumour. An abscess of rectal origin generally bursts into the rectum or externally, seldom into the vagina. If it does, it is usually on the posterior wall, near the fourchette, not where the duct of Bartholin's gland opens. Its pus has a fæcal odour.

The treatment of such abscesses is freely to open them, so that they may close from the bottom, and not leave a fistula. If a rectal opening be present, as a rule it should be treated as a fistula in ano. Consult works on general surgery for details.

4. **Traumatic abscess.**—An abscess may be produced in the labium, as anywhere else, by violence, such as a fall or a blow, especially if violence is combined with venereal infection. Such an abscess does not form so definitely limited a swelling as that of a suppurated Bartholin's gland. It may burst at any part of the vulva, but seldom bursts just where the duct of Bartholin's gland opens. In an abscess from such a cause you will get a history of the incidents which caused it. When such an abscess has burst, it heals, and does not relapse.

Lipoma.—In every place where there is subcutaneous fat, overgrowths of this fat occasionally occur, and are called *lipomata*. Such masses have been met with in the labium and in the mons veneris. They are rare; I have never seen a large one. Emmett * describes one growing by a long pedicle from the labium majus, and reaching nearly to the knee. Stiegele † has removed one measuring twenty-two inches by six, by five, and weighing ten pounds. The characters of these growths are like those of fatty tumours elsewhere; they are circumscribed lumps, irregular in shape, made of soft elastic lobules. They are neither painful nor tender, and cause trouble only mechanically, by reason of their size and weight. The only treatment is removal.

Fig. 166. Fibrous polypus or Molluscum fibrosum of labium. (*After Burgess, from a patient of the author's.*)

Fibromata. — Fibroid enlargements occur in the labia. They grow slowly, and are painless. They may become polypoid, as in Fig. 166. Those that I have seen were soft, and loose in texture, not hard and nodular, like uterine fibroids. They only cause symptoms mechanically, by their size and weight. The treatment is their removal with the knife. Arrest hæmorrhage by compression of bleeding points with sutures.

Elephantiasis.—This disease does not occur in England.

* "Principles and Practice of Gynæcology," 1878, p. 594.

† Quoted by Hildebrandt in Billroth und Lücke, "Deutsche Chirurgie."

It is seen only in tropical countries, or in people who have been in the tropics. It is believed, with good reason, to depend on blocking of the lymphatic vessels by the filaria sanguinis hominis,* a parasite only found in the tropics. Owing to this blocking the lymph cannot return, swells the affected parts, and develops into fibrous tissue. It is seen during the ages of sexual activity, being rare in old women and in children, and is of slow development, extending over years. Cases of congenital and infantile enlargement of the sexual organs have been described under this name, but they were probably not of this nature. It affects most often the labia majora, then the clitoris, and least often the labia minora; often all these parts are affected together. The affected parts sometimes form a very large tumour, weighing twenty pounds or more, and reaching to the patient's knees. Its surface is irregular, warty, nodulated, seamed with fissures. As it is of low vitality, and exposed to pressure and friction and other injury, its surface is often excoriated and ulcerated. Superficial gangrene has been seen. The secretions of the diseased surface, owing to retention and decomposition in the fissures of the surface, become very offensive. The lymphatics, which should return lymph from the part, and the glands to which they go, are swollen and indurated.

During the development of the disease the patient suffers from febrile attacks, but these are due to the filariæ in the blood, which produce the disease of the vulva, and not to the change in the vulva itself. The elephantiasis of the vulva produces trouble mechanically, by its size and weight, and also by the offensiveness of the discharge.

The only treatment is to cut away the mass. Before doing this, if the tumour be large, the patient should keep recumbent, and with the tumour raised, for an hour or two, that as much blood as possible may drain out of it. Hæmorrhage must be arrested by tying bleeding points or compressing them with sutures. When growing from the clitoris, the urethra is dragged down, courses along the upper and back part of the growth, and must be dissected

* *See* Manson, Art. Filaria, "Quain's Dictionary of Medicine;" and in Davidson, "Hygiene and Diseases of Warm Climates," 1893.

out before the tumour is amputated. The wound left after removal of a great mass of elephantiasis heals slowly, but completely.

Hypertrophy of the labia minora.—The labia minora are sometimes so long as to cause annoyance. In the adult the labia minora should be covered by the labia majora; sometimes they project outside them. This may be either a congenital peculiarity, or it may be from long-continued inflammatory œdema. One labium may be enlarged, or both. When they are thus enlarged, they may cause local discomfort, irritation, and get swollen from œdema. Such œdema can be cured by rest, astringents, &c., but will be liable to return. Cases have been reported in which the labia minora were as much as ten inches in length. Great enlargement is rare in Europeans, but is common in certain African races, forming the so-called "Hottentot apron." The only permanent cure is to cut off the enlarged labium or labia. This will remove the symptoms and be in no way detrimental. It is easily done; cut off the labium with scissors, and stop bleeding by sewing the inner and outer skin edges together.

Hypertrophy of the clitoris is occasionally seen; that is, the organ is larger than usual, but is in every other respect healthy. Cases of elephantiasis are sometimes wrongly described under this title. No one has defined the size that a clitoris ought to be, or what is the smallest clitoris to which the term hypertrophy may be applied. It has been supposed that unusual size of the clitoris depended on unusual exercise of the sexual function; but Parent-Duchatelet showed that there is no relation between the size of the clitoris and the sexual activity of the owner. Cases of very large clitoris described in old books were probably males with hypospadias.

Hypertrophy of the labia majora.—Simple chronic enlargement of the labia majora without alteration in shape has been described. This is unknown as a congenital peculiarity. Sometimes this is due to chronic inflammation or œdema, but it has also been seen without discoverable cause. Emmett* relates a case in which he removed both labia, one weighing three pounds, the other two pounds. He

* "Principles and Practice of Gynæcology," p. 594.

could discover no local cause, but could attribute it only to "excess of nutrition." Removal is the only treatment of such hypertrophy, if it be great enough to require treatment.

Fig. 167.—Descent of perineal hernia in front of broad ligament. (*From a photograph, by permission of Dr. W. Smyly.*)

Enchondroma of the clitoris.—Three cases have been described under this title: not enough to warrant any general

statements about it. It is a pathological curiosity, if the descriptions are free from error.

Varices of the vulva.—In women who have had many children the labia are sometimes enlarged by varicose veins. These give rise to a disagreeable sense of fulness in the part, sometimes to itching, but nothing more so long as the patient is not pregnant. If the patient become pregnant, she runs risk of painful or even fatal results from the bursting of such veins. But in this work I do not describe the diseases of pregnancy.

The diagnosis is easy. The bluish colour and worm-like aspect and feel of the veins make their nature clear. No treatment short of excision can alter this condition, and I have never seen a case which called for such a proposal.

Hernia.—A labium may be enlarged by a hernia, like the scrotum in the opposite sex. But labial hernias are seldom so large as scrotal hernias. The ordinary hernia which descends into the labium is inguinal hernia—that which leaves the abdomen through the inguinal canal.

Two other hernias special to the female have been described—one which bulges through an opening in the pelvic fascia in front of the broad ligament, and bulges down by the side of the vagina into the labium (Stolz) (Fig. 167); and one which descends through an opening in the pelvic fascia behind the broad ligament, and comes down between the vagina and rectum, bulging in the perineum. I have never seen either. The mark of these swellings is that they are reducible, and go up with a gurgling sound. Their treatment is in the province of the general surgeon.

Part VIII.

DISORDERS OF MENSTRUATION.

CHAPTER XXXVII.

MENSTRUATION.

What is menstruation?—Menstruation is the expulsion of the menses, that is, broken up endometrium and blood, from the uterus. It recurs in most women every four weeks throughout the years in which pregnancy is possible. The average age of its commencement is fourteen, and of its cessation from forty-five to fifty. It is said that in hot countries it begins earlier and in cold countries later than in Europe. But the evidence that this depends on climate is not satisfactory. In such countries the facts have not been investigated so extensively as those relating to European women. Birch* has collected some evidence which shows that in India menstruation begins on the average about two years earlier than in Europe; so has Joubert. Its advent is hastened by luxury and libidinous excitement; retarded by hard living and freedom from sexual ideas. If it comes on earlier in hot countries it is because premature sexual stimulation is commoner in the South than in the North. Menstruation usually recurs about every twenty-eight days, reckoning from the beginning of one menstruation to the beginning of the next. Variations from the normal rhythm are common: in some women the interval is longer, in others shorter. Such deviations from the average are not important, unless attended by other symptoms of ill-health. The duration varies from one day to nine or ten; five is about the average. The quantity lost is usually from four to six ounces; but it varies much in healthy women. Complete absence of the flow is compatible with good health. The quantity is too great if the patient

* Davidson on "The Hygiene and Diseases of Warm Climates," 1893.

suffers from anæmia afterwards; an amount short of this is not pathological, and does not requires treatment. How much the patient can lose without suffering from anæmia depends upon the state of her blood and her blood-making organs. Often the duration of the flow is hard to define, for the flow, at first red, gradually becomes brown, and then passes into leucorrhœa. A white or yellow discharge for two or three days after menstruation is common. Menstrual blood is dark in colour and, as a rule, the secretion of the uterine and cervical glands prevents it from clotting. If this secretion is not in due proportion to the quantity of blood, the blood clots. Under the microscope, the menstrual flow is found to contain blood corpuscles, both white and red; epithelium from the body of the uterus, the cervix, and the vagina; and cells in a state of advanced fatty degeneration, the so-called compound granular corpuscles.

Menstrual changes in the endometrium.—Menstruation is the outward sign of changes that take place in the uterus chiefly in the lining membrane of its body. (This lining membrane is often called "the mucous membrane of the uterus;" but this is not quite correct. Strictly speaking, the mucous membrane of the uterus is its whole thickness up to the peritoneum; the muscle being an enormously hypertrophied part of the mucous membrane. Hence there is no layer of connective tissue marking off the mucous membrane from the muscle. The submucous tissue, properly so called, is between the muscle and the peritoneum.) Discrepant statements have been made as to the changes in the endometrium. These discrepancies come from the difficulty of getting good material for observation. Healthy human uteri can only be got so long after death that it is doubtful whether minute changes are physiological or *post-mortem*. An inverted uterus can hardly be taken as a type of health. Uteri removed during life by persons competent to examine them are always diseased. The condition of the whole endometrium cannot be correctly inferred from a little bit detached by a curette. The only observations free from these sources of error are those made on animals. Mr. Walter Heape* has observed the changes in the uterus during the menstruation of

* "Phil. Trans.," vol. clxxxv., 1894, B., pp. 411—471.

semnopithecus entellus. He finds that the cycle of change is this: starting from a "period of rest," that is, a time shortly after menstruation, there is first growth of the interglandular tissue; then growth of the vessels; then congestion; then small extravasations of blood; then these small extravasations

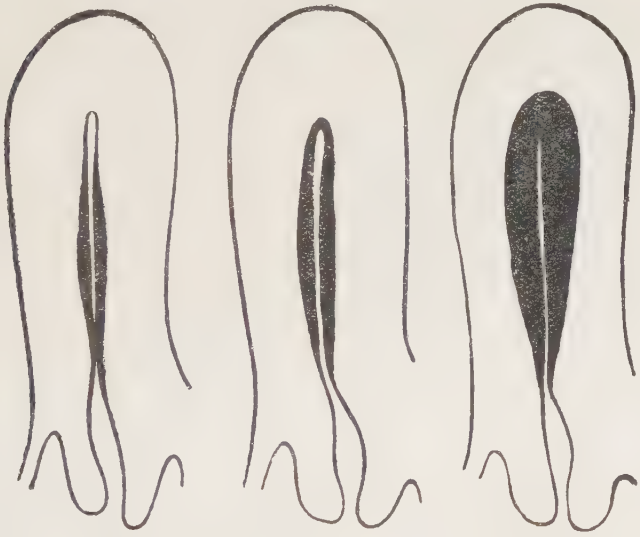


Fig. 168.—Uterus three days after menstrual flow has ceased. The shaded part represents the renewed mucous membrane.

Fig. 169.—Uterus a week after menstrual flow has ceased. The shaded part as in Fig. 168.

Fig. 170.—Uterus just before menstruation. The shaded part represents mucous membrane.

(*After Sir John Williams, "Obstetrical Journal," Nov.*, 1875.)

become blended together into large lacunæ; then these lacunæ burst, and blood escapes into the uterine cavity, the endometrium being torn away by the rush of blood. Afterwards there is regeneration of the endometrium from the embryonic tissue of which it is composed, the undifferentiated cells of this tissue being able to form epithelium, glands, and vessels.

Now, if this account of what takes place in the monkey be compared with the observations of those who have examined the whole uterus, and not merely scrapings, in the human female (Kundrat and Engelmann, Sir J. Williams, Leopold, Wyder), it will be seen that in major points the statements of

different observers are in harmony with one another and with Heape's observations, and that they are only discrepant upon minor points. All agree that before menstruation the human endometrium is thicker, and that after menstruation it is thinner (Fig. 168); that there is in women a growth of the endometrium during the intermenstrual period (Fig. 169), and a disintegration of it during menstruation, such as Heape observed in monkeys. The thickness of the endometrium before puberty is about one twenty-fifth of an inch; before menstruation, from one-eighth to a quarter of an inch (Fig. 170); after menstruation about one-twelfth of an inch. All observers agree that hæmorrhage takes place into the endometrium as Heape describes. The points in which those who have examined human uteri differ are as to the mode of hæmorrhage, whether by diapedesis or laceration of vessels; as to the mode of disintegration, whether by fatty degeneration or not; as to the extent of disintegration, whether the whole mucous membrane is shed or only part of it; and as to the mode of regeneration, whether from muscular tissue or from remaining cells of the endometrium. Now these are the points most difficult to determine, for views on these matters are based upon appearances which may have been modified by *post-mortem* decomposition. I think that here we may fairly assume that the human endometrium is broken up during menstruation, and regenerated during the intermenstrual period much in the same way as that of the monkey.

Does the uterus contract during menstruation?—Direct proof that the uterus contracts has not yet been obtained, because the alterations in its size and consistence are so slight that they cannot be perceived by our methods of examination. I believe that it does, for the following reasons: (1) When the uterus is big enough for contractions to be felt, during pregnancy, soon after delivery, or when it contains a fibroid, intermittent contractions are present. (2) Sometimes when the uterus contains a fœtus or a fibroid, and usually after delivery, the uterine contractions are painful. The pain of dysmenorrhœa is like that of painful uterine contractions. (3) When the uterine cavity contains a fœtus, a fibroid, a placenta, or clots, the uterine contractions have for their function to expel the contents, and are normally accompanied with dilatation of

the cervix. During menstruation contractions seem required to expel blood and broken-up endometrium; and it has been proved by measurement that there is dilatation of the cervix.* (4) After menstruation is over the uterine cavity is smaller than it would be if the endometrium had been removed and contraction of the uterus had not occurred. But (as Champneys points out) this diminution in size should rather be called retraction.

Vascular changes with menstruation.—Before menstruation there is an increased flow of blood to the pelvic organs. When menstruation begins, contractions of the uterus squeeze the blood out of that organ; but the congestion of the other pelvic organs is not relieved until the menstrual hæmorrhage is free. This congestion makes the vagina and cervix uteri a deeper red and softer. It produces in most women a disagreeable feeling of fulness in the pelvis, and a little backache and lassitude. There is increased vascular tension everywhere. I have seen in a patient recovering from purpura a fresh crop of spots come out before menstruation. Adhesions in the iris have been seen to bleed at this time. Hæmorrhoids bleed more near the time of menstruation. Epistaxis may occur; and if this is copious it may so weaken the patient that the menstrual bleeding may not come on. This is the explanation of some of the cases of so-called vicarious menstruation. According to Giles,† the increase in vascular tension is greatest on the day preceding and the first two days of menstruation. There is also a slight rise in temperature preceding menstruation, and reaching its maximum (99.9) two days before menstruation. According to Schrader,‡ immediately before menstruation, there is diminution in the excretion of nitrogen.

Relation between ovulation and menstruation.—*Ovulation* is the liberation of the ovum from the ovary: *menstruation* indicates the monthly preparation of the uterus to receive the fertilised ovum. These two processes have a common aim, but no closer connection. The ovaries are essential for every part of the reproductive process; the uterus is not.

* *See* a paper by the author, "Obst. Trans.," 1894.

† "Obst. Trans.," vol. xxxix.

‡ *See* Strassman, "Arch. für Gyn.," Bd. lii., for a full account of the literature of the subject and references.

Ovulation occurs without menstruation. The ovaries are developed earlier than the uterus, and may be perfectly developed though there be no uterus, or only a rudimentary one. The ovaries of the fœtus while it is in utero produce ova, and it has even been denied* that ova are ever formed after birth. Graafian follicles ripen, though they have not yet been proved to burst, long before menstruation has appeared; and there is reason to think that they may degenerate without bursting before puberty. Graafian follicles also ripen and burst during periods of amenorrhœa after the climacteric, and when the uterus is absent.

Does ovulation coincide with menstruation?—At one time it was supposed that it always did. But the most recent observations go to show that while ovulation is in the human female spontaneous—that is, it is not known to depend upon any external cause—yet that it does not always coincide with menstruation,† though it generally does. The relation between ovulation and menstruation is that if the ovary happens to contain an ovum ripe enough the menstrual congestion determines its rupture.

A case is often quoted which was observed by Dr. Oldham in 1857, in which in a patient with hernial ovaries, one or both of them increased in size and then shrank, about every three weeks. This patient had no uterus or vagina, so that the menstrual nature of the swelling could not be proved. Against this may be put two cases observed by Werth,‡ in which a patient with a rudimentary uterus, had also an ovary in a hernial sac, which swelled and became painful periodically; but observations showed that the swelling and pain did *not* recur regularly. Swelling of the ovary may merely mean vascularity, not bursting of a follicle.

Another fact thought to indicate that ovulation takes place about the time of menstruation, is that women are undoubtedly more liable to conceive during the week following menstruation than at any other time. But conception *may* take place at any time; so that if liability to conceive proves ovulation, ovulation takes place at all periods of the monthly cycle.

* Van Beneden, quoted by Nagel, "Arch. für Gyn.," Bd. xxxii., S. 11.

† For a summary of the evidence see Heape, op. cit.

‡ "Arch. für Gyn.," Band xii.

The greater frequency of conception soon after menstruation may depend upon some condition of the uterus.

The corpus luteum.—When a Graafian follicle has burst, there remains a cavity having a wrinkled yellow lining and containing clot. This yellow lining is called the *corpus luteum.* It has the structure of a gland. It is formed of large epithelioid cells, much like decidual cells, arranged in regular rows and columns, with capillaries between them, in a manner resembling an acinus of the liver, or the cortical layer of the supra-renal body. These cells are called *lutein* cells. This corpus luteum is a very important organ.* Destruction of the corpus luteum produces the same effects as removal of the ovary. The corpus luteum controls the nutrition of the uterus, prevents it from lapsing into its infantile or passing into its senile condition; it prepares the uterus to receive a fertilised ovum, or failing such an ovum it causes menstruation.

It is believed that, if no pregnancy occurs, a corpus luteum persists for two or three weeks after rupture of the follicle. We cannot be precise, for the experience of operators† shows that follicles may rupture at any time in the menstrual cycle; and therefore a corpus luteum gives us no information as to its age. Then it is eaten up by leucocytes, and gradually disappears. If pregnancy occurs, the corpus luteum stimulates the growth of the uterus, retains its full size for three months, and then gradually and slowly gets smaller.

Morbid changes may occur in the corpus luteum. There may be hæmorrhage—lutein hæmatoma; or suppuration—lutein abscess; or the development of a cyst. With the so-called "vesicular" or "hydatidiform" mole there has been found, in the cases in which it has been looked for, a large quantity of lutein tissue. It would probably be correct to say, "an excess" of lutein tissue, but, as we have no standard of what is normal, the word "excess" has here no meaning. It is after this kind of mole that chorion-

* *See* Andrews, "The Internal Secretion of the Ovaries," "Journal of Obst. and Gynec. of British Empire," 1904, vol. i.; and Lockyer, *ibid.*, 1905, vol. i., "Lutein Cysts," &c.

† *See* Leopold, "Arch. für Gyn.," Band xxi.

epithelioma so often occurs. Lutein tissue thus seems to stimulate abnormal as well as normal growth of trophoblasts.

Menstruation depends upon ovulation.—When the ovaries are imperfectly developed menstruation does not take place. When they are removed menstruation stops. A few cases are met with in which after the ovaries had been, it was believed, removed, menstruation went on. Such cases are mostly because either (*a*) the ovaries have not been completely removed; or (*b*) there was a new growth in the uterus, which provoked hæmorrhage; or (*c*) there was a third ovary, an excessively rare thing, but which some think happens.*

* For references to cases see Feoktistow, "Arch. für Gyn.," Band xxvii.

CHAPTER XXXVIII.

DYSMENORRHŒA.

What is dysmenorrhœa?—This word has been used in two different senses—to denote a symptom and to denote a disease. Most authors mean by it pain recurring regularly once a month. In this sense it is a symptom, which may be due to various causes. Matthews Duncan restricted its application to painfulness of the uterine contractions which expel the menstrual decidua. In this sense it is a disease. In this and the following chapters I use the word to denote a symptom.

Unavoidable errors in treating dysmenorrhœa.—We ourselves have no means of measuring pain in another. We are dependent upon the patient's statements as to the fact of pain, and as to its kind and severity. Pain that is very severe has effects upon the patient that other people can see; but short of this, we cannot find out for ourselves anything about it. The only way of testing what the patient says is by noting whether her statements are discrepant or consistent with one another, and with what her friends tell us. Hence, in judging as to pain, some error is unavoidable.

The severity of pain depends upon the condition of the patient's nervous system. A sensitive patient feels acutely what a strong one would hardly notice. Such a patient may suffer much from the menstrual congestion, although there is nothing abnormal except her sensitiveness. Nothing will cure such menstrual pain. The problem in dysmenorrhœa is to distinguish these cases from those that can be cured.

The importance which the patient attaches to pain, and the way in which she describes it, depend on how she has been brought up. If she has been trained to live for others she will only complain when her pain is so bad as to prevent her from fulfilling her duties. If she has been taught to think much of her own ease, and to use words loosely, she will make a great fuss over slight pain, and describe it in inflated and incorrect language; and the result of treatment will be disappointing.

Kinds of menstrual pain.—Menstruation may cause pain in two ways. (1) The uterine contractions which expel the blood and the decidua may be painful. (2) The congestion of the pelvic organs which is at its height just before menstruation may be painful. This pain from congestion is a reflected pain felt over the area supplied with sensory nerve fibres from the tenth and eleventh dorsal segments of the spinal cord, and, when severe, is accompanied with superficial tenderness of the skin. The breasts often ache.

Monthly pain due to painful uterine contractions.—There are three forms of the dysmenorrhœa which consists in painful uterine contractions. These are:—

1. Obstructive;
2. Membranous;
3. Spasmodic.

CHAPTER XXXIX.

OBSTRUCTIVE DYSMENORRHŒA.

Former errors.—It was at one time thought that all dysmenorrhœa was from mechanical obstruction. Two kinds of mechanical obstruction were supposed to be common: (*a*) It was said that when the uterus was bent forwards or backwards, the canal was bent at an angle, so that there was a spur or kink which blocked it up; that blood accumulated behind this obstruction, and dilated the uterine cavity; that uterine contractions were provoked to expel this retained blood, which having to be more powerful than when the uterine canal was not bent, were painful. It is now known that when the uterus is bent the thickness of its wall makes the curve in its canal a gradual one, without kink or spur anywhere; and no specimen is known to exist in which the cavity of a healthy uterus is dilated without anything except a bend to account for it. There is no such thing as obstruction of the canal of a healthy uterus by bending.

(*b*) It was said that dysmenorrhœa was due to "stenosis" of the canal, which was too small to let the blood through. The advocates of this theory differed as to where the stenosis was; some said at the internal os, others at the external. The treatment was to cut or stretch the uterine canal at the part supposed to be contracted. Such treatment was often effective, and this was thought to prove that the theory was correct. But the cure of dysmenorrhœa by dilatation is not merely a case of opening up an orifice too small to let the blood pass. The following reasons show this: (1) Congenital smallness of the external os, so that it will not admit even a probe, is sometimes seen without any menstrual pain. (2) The instruments used to cure this so-called stenosis —Simpson's metrotome for instance—were so big that they could not be passed through a canal which was really obstructed. (3) No such changes as take place behind strictures of the urethra, bowel, etc., and in the uterus itself as a result

of acquired obstruction, have ever been seen in the uterus as a result of congenital stenosis of the canal. (4) In most cases of severe dysmenorrhœa the cervical canal is norma in size.

Real causes of obstructive dysmenorrhœa.—The most characteristic cases are those in which the cervix has been *amputated* for cancer, and at the point at which it was cut off the canal is surrounded with a ring of cicatricial tissue. (In this operation it is desirable to remove the mucous lining of the canal as high up as possible, and this requirement makes it impossible to stitch the mucous membrane in such a way as to prevent atresia. When the cervix is amputated for hypertrophy, stenosis and atresia can and ought to be prevented.) The cicatricial tissue contracts. Hence, often within a year or two of the operation the patient comes back complaining of pain with menstruation, getting worse month after month. If not treated, the condition often goes on to complete atresia. In *cancer* of the cervix, the new growth may so block the cervical canal as to cause painful menstruation, and even retention of menstrual fluid. The same thing may happen from a *fibroid*. Obstruction due to cancer will undergo natural cure by the breaking down of the new growth.

Diagnosis of obstructive dysmenorrhœa.—This rests on: (1) The history. The pain is recently acquired; it never dates from the beginning of menstruation. (2) It has followed an operation; or it has been preceded by symptoms such as a new growth produces. (3) If the patient has been pregnant she will say that the pain is like that of labour or abortion. These points are suggestive, not conclusive. The cause of the pain is only to be found out by physical examination, which patients the subject of the conditions which cause obstructive dysmenorrhœa will readily allow. In the most common form—the cicatricial—you find that the cervix is absent, and you cannot pass a sound. With the speculum you see at the top of the vagina a linear or stellate scar, in which there is an opening, so fine that you can only get in a very small probe, or a fine flexible bougie held in a pair of forceps; and this, when in the canal, is gripped by it. Remember that difficulty in entry does not prove contraction, for the point of the instrument may catch

in some fold; it is the grip of the stricture when you try to withdraw the probe that proves the smallness of the passage. If due to cancer or fibroid, difficulty in the passage of a probe, and gripping of it when passed, will demonstrate obstruction.

Treatment of obstructive dysmenorrhœa.—The treatment is removal of the obstruction.

In cicatricial stenosis, having found the canal with a probe insert the point of a bistoury and enlarge the canal by cutting. Make an opening measuring about half an inch from side to side. Measure with a sound the distance from the orifice to the fundus of the uterus. You should have ready glass or vulcanite stems about the size of a No. 8 catheter, and of lengths differing about a quarter of an inch from one another, and ranging from one to two inches. Place in the canal one of these stems about a quarter of an inch shorter than the length of the canal. Let the patient wear this for about three weeks while the incisions are healing, so that the cut surfaces may not unite again, but heal over apart from one another without uniting. The patient is safer in bed while she is wearing the stem; but if proper precautions as to the length of the stem and as to antiseptics have been used, the risk of harm from getting up is small.

Obstructive dysmenorrhœa from cancer is very rare. Scraping the cancer away is the cure. A fibroid which causes dysmenorrhœa by blocking the cervix can be removed.

CHAPTER XL.

MEMBRANOUS DYSMENORRHŒA.

What is membranous dysmenorrhœa?—Membranous dysmenorrhœa is a disease in which the endometrium, instead of being broken up and shed in a pulp, is shed entire, like a cast of the uterus, or in large pieces. These pieces stick in the canal, and provoke uterine contractions which are painful.

Frequency.—We have no exact knowledge what proportion of women pass membranes during menstruation, because women seldom notice membranes in the discharge unless they look for them. They generally take them for clots. If you insist on patients bringing to you every clot that is passed, and examine them, you will find that membranous dysmenorrhœa is commoner than is generally supposed. Scanzoni found membranes passed by two-thirds of his dysmenorrhœa patients, but only one-sixth of these found out the membranes for themselves. Sir J. Williams found membranes in three-fourths of his dysmenorrhœa patients. I have often found membranes passed by patients who had no idea that they passed any other solid substance than clots. Membranes are sometimes passed without pain. The presence and severity of the pain depend much on the state of the nervous system. I have known patients pass membranes with pain while attending as hospital out-patients, and then menstruate and pass membranes without pain after treatment in hospital with rest, good food, and tonics.

Monthly abortion.—In some cases these membranes are monthly abortions. If the patient is not impregnated, the membrane comes away as a pulp. If she is impregnated, the decidua becomes more developed, thicker, and comes away entire or in large pieces. We know not why these patients abort every month; but cases enough have been published to put the fact beyond doubt.* The patient finds that while she

* See Champneys on "Dysmenorrhœa."

is living as a married woman she passes membranes with pain every month; but that when the chance of conception has not happened, menstruation is painless.

Causation.—We know practically nothing about the causes of membranous dysmenorrhœa. It undoubtedly is sometimes primary—that is, occurs in otherwise healthy virgins at the beginning of menstruation. It has been attributed to "inflammation." But in cases in which it is first noticed after an attack of pelvic inflammation, it is possible that membranes may have been passed before the inflammation, but that the inflammation made their passage painful; or that the occurrence of inflammation made the patient examine the discharge and thus find the membrane, which was not noticed before. If it be granted that this disease is due to inflammation, it must be admitted that not all pelvic inflammations cause membranous dysmenorrhœa; and we have no knowledge what kind of inflammation causes it, or why. It has been attributed to an excess of fibrous tissue in the uterus.* It is supposed that there is an excess of fibrous tissue, because the disease occurs sometimes in young women with small uteri, sometimes in women with subinvolution; in these conditions it is supposed that fibrous tissue is in excess. But this is a theory; there is no evidence that membranous dysmenorrhœa is peculiar to these conditions. It has been said to be due to disease of the ovaries, but no definite change in those organs has ever been shown to be associated with it.

Diagnosis.—The diagnosis of this form of dysmenorrhœa is made by the discovery of the membranes. There are no characters of the pain so definite and constant that they can be trusted to for diagnosis. The only peculiarity is that the pain increases in severity until the membrane passes, and then at once improves. If the membrane is passed in more than one piece, the pain gets better after one piece is passed; then gets worse again, and is again relieved after the passage of another bit. A description such as this is interesting, but not all patients describe their pains with exactness and accuracy; and if a description like this is given it does not follow that the peculiarities of the pain are due to bits of membrane. The severity of the pain depends upon the

* *See* Sir J. Williams, "Obst. Trans.," vol. xix.

patient's general health; worse when this is depressed, better when this is good.

How the pain is produced.—The pain is due like most menstrual pains, partly to the congestion of the pelvic organs which precedes menstruation, partly to uterine contractions These occur in every menstruation, but in membranous dysmenorrhœa they become more painful when the membrane plugs the canal. The membrane is detached from below upwards, so that its lower part may enter the os internum and provoke pain, while the upper part is still attached, so that the membrane cannot move on. The increased pain is partly because more forcible contractions are needed, partly because the os internum is sensitive and the membrane irritates it. It has been said* that the contractions are "abnormal, partial and unconsentaneous." This is theory.

Prognosis.—With membranous dysmenorrhœa there is generally sterility. Membranous dysmenorrhœa sometimes gets well, but no treatment can be relied on to cure it. If the patient's circumstances and mode of life continue the same, membranous dysmenorrhœa will continue to the menopause. If the tone of her nervous system can be improved, the pain will be felt less. Sometimes local treatment will cure it, but cure cannot be predicted.

Characters of the membrane.—A complete dysmenorrhœal membrane is a flattened triangular bag, a cast of the uterine cavity. It is formed of two triangular pieces, and where these join, at the top and sides, it is thinner than elsewhere, and therefore often the two pieces are separate. Often it is broken up into more than two pieces. It is about an inch and three-quarters in length, about an inch in breadth, and from a twenty-fifth to a twelfth of an inch in thickness. Its outer surface is rough, its inner surface marked with sulci and dotted with little pits, which are the orifices of the uterine glands. When fresh the membrane is a dull pink in colour. When entire the sac has three openings, one corresponding to the os internum and one to each Fallopian tube. Microscopically, it is formed of connective tissue, thickly studded with small round cells, and containing vessels and gland tubes lined with columnar epithelium. It differs from the healthy

* Champneys, op. cit., p. 46.

uterine mucous membrane in being so thickly studded with round cells. Some observers have described large cells like decidual cells; but the specimens in which these were found were probably monthly abortions. (Fig. 171.)

Substances resembling dysmenorrhœal membranes.—As much may turn on the diagnosis of a solid substance passed from the uterus, it is important to know what such substances may be, and what are the characters of each.

Fig. 171.—Dysmenorrhœal membrane. Natural size. (*After R. Barnes, from a specimen, G G 4, in the Museum of St. Thomas's Hospital.*)

1. *Clot.* A membrane may be rolled up, and so look like a clot. You can unroll a membrane. Try to unroll a clot, and it breaks down with a crumbly fracture. Cut it through and you will find it dark red and homogeneous throughout. If there be doubt, the microscope will settle it.

2. *Fibrinous cast of uterus.* Clot may become so moulded to the shape of the uterus as to form a fibrinous cast of the uterine cavity. It is said that they are common. I think them not so common as membranous dysmenorrhœa. Such a cast will not be dotted with the orifices of glands on its inner surface. Its fracture will be like that of clot. If in doubt, microscopical diagnosis is easy.

3. *Vaginal exfoliations.* In a rare form of vaginitis, the vaginal epithelium is shed in large pieces. I have described this in Chapter XXXII. These form translucent flakes, smooth on both sides, not dotted with orifices on either side. Sometimes this may be produced by caustics or astringents: but these things are not generally used while the patient is menstruating, and the patient will usually be aware of what has caused the shreds.

4. *Early abortions.* In the cases of monthly abortions mentioned above, the diagnosis is not important, for the case is practically membranous dysmenorrhœa, which is curable by

living a single life. The cure reveals the nature of the membrane. Diagnosis is chiefly important in cases in which the passage of a membrane leads to imputations on the patient's chastity. In the early months the ovum is often expelled

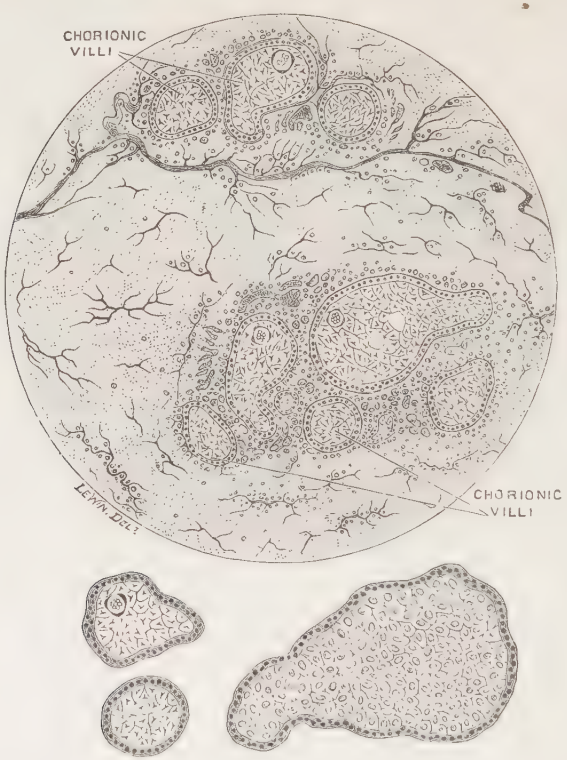


Fig. 172.—Microscopical characters of chorionic villi on section. (*After Bland Sutton.*) Diagrammatic.

entire; if then the embryo is found within it, there can be no doubt as to its nature. But the membranes may break, and the embryo be lost, and then an opinion has to be given on the nature of the membrane. An aborted ovum has a decidua reflexa, and an amnion. Nothing like these structures is found in a dysmenorrhœal membrane. But now and then the amnion is detached and expelled with the fœtus inside it, and the decidua may be broken, so that the decidua reflexa cannot be identified by its relation to the decidua vera.

In that case diagnosis may be impossible without the microscope. Two histological features mark a membrane as the product of pregnancy: (*a*) large decidual cells; (*b*) chorionic villi. The latter are characteristic. Chorionic villi as seen on section are approximately rounded or oval in shape, bounded by a layer of deeply staining protoplasm, showing no distinct cell outlines, but containing nuclei irregularly placed in numbers varying at different places. This is called the *syncytium*. Within this are cells with lightly staining protoplasm, rounded and deeply staining nuclei. These are what is called *the layer of Langhans*: in the adult placenta they form a single layer only (Fig. 172). Decidual cells have been seen in membranes not formed in pregnancy;* so it is unwise to insist on an opinion based on this appearance alone. The decidua of pregnancy is thicker than that of menstruation. But the difference in thickness between the membrane of menstruation and that of pregnancy is not so definite that a conclusion can be based on it alone. In any case in which there is doubt as to whether abortion has taken place or not, the benefit of the doubt should be given to the patient—against pregnancy if she is not married; in favour of it if thinking she has been pregnant will make her happier.

5. *The decidua of extra-uterine pregnancy.* This differs from the decidua of menstruation in being larger and thicker, and in containing large decidual cells. The passage of such a membrane was at one time thought to be pathognomic of extra uterine pregnancy, but cases recently published† show that such a membrane may be passed when no pregnancy exists.

6. *Other substances.* I mention some other things, because it is said they may be mistaken for dysmenorrhœal membranes.‡ Exfoliation of mucous membrane of bladder in severe cystitis. Exfoliation of mucous membrane of uterus in phosphorus poisoning or in cholera. Here the passage of something from, or apparently from, the genital canal, is a solitary incident in a severe acute disease, not a thing recurring monthly. Foreign bodies, such as paper wrapped round

* *See* authors quoted by Champneys.

† *See* Chapter XIX.

‡ Champneys, op. cit.

pessaries, masses of coagulated mucus, or of sebaceous matter. These can only be supposed to be dysmenorrhœal membranes by people who do not examine them at all, and upon such descriptions are wasted.

Treatment.—Membranous dysmenorrhœa may get well under any treatment. There is no treatment from which cure can be predicted; and such relief as we can certainly promise is seldom enough to make disagreeable or protracted treatment worth trying. The methods of treatment are four:—

1. General tonic treatment;
2. Empirical drug treatment;
3. Local treatment;
4. Radical.

1. General tonic treatment. I have mentioned above that I have known membranes passed with pain while a patient was out of health, and passed without pain when the same patient was in good health. Therefore, one important object is to bring the patient's general health to the best possible state, by means which depend upon the features of the individual case. The important aids are regular and abundant sleep, frequent and suitable meals; aperients as often as required; sunshine, fresh air, and moderate exercise; iron, quinine, or arsenic if indicated; change of air to a warm or bracing place according to the time of year and the patient's idiosyncrasy. The application of these and similar means to each case must be dictated by your general knowledge and common sense.

2. **Empirical drug treatment.**—This is the giving of drugs either (*a*) somehow to modify what takes place in the uterus, or (*b*) to stop the pain. (*a*) The empirical treatment of membranous dysmenorrhœa is the same as that of spasmodic dysmenorrhœa. We know of no drug that will certainly cure either. Matthews Duncan often prescribed sulphur gr. v., mist. guaiaci ʒj, three times a day. Sometimes this fails, but relief to pain so often follows it, that I have no doubt that it sometimes cures, though I know not how. Its appearance and taste, and that it sometimes purges, are its drawbacks. Ammonia preparations in large doses are old empirical remedies. Ammonium chloride, in gr. x—xx doses; liq.

ammoniæ acetatis, in ʒj doses, or both together, may be given. I have known benefit follow these; I have also known them fail. Nothing can be predicted as to their action. If the patient is one of the active, irritable type, give arsenic a good trial. The power of this drug over scaly skin diseases (psoriasis, pemphigus, etc.), and upon nutrition generally, makes it a reasonable expectation that it may modify the endometrium. Its action upon the nervous system, as shown by its effect in gastralgia, is an additional reason for expecting it to do good. I cannot say that my expectations from it have been realised, but I think I have seen benefit. I have known Matthews Duncan prescribe mercury, and anything recommended by that great physician is worth trial. This drug will make syphilitic changes go, and often some that are not syphilitic. On the same principle, in an obstinate case, I should try iodide of potassium. I have seen cure follow the administration for several months of pot. chlor. gr. x., Aletris Cordial ʒj. three times a day, but I have not tried this much. (*b*) The best drug to relieve the pain is antipyrin. In some people this drug, even in small doses, produces toxic symptoms. Therefore, begin with a small dose, gr. xv. three times a day, with spt. chlorof. ʒss. If this fails, but does no harm, cautiously increase the dose and its frequency. If antipyrin does not suit, try phenacetin, beginning with gr. x. as a dose; or aspirin gr. xv.

Do not give either chloral or morphia. If one of these drugs is taken for a frequently recurring pain, there is danger of the patient getting to take the drug habitually. Removal of the ovaries or uterus is better than letting the patient get the morphia or chloral habit.

3. **Local treatment.**—Two kinds of local treatment may be tried.

(*a*) *Dilatation.*—By widening the canal, more room is made for the passage of the membrane. Dilatation of the cervix also makes contraction of the body more regular and effective. In membranous dysmenorrhœa dilatation of the cervix almost always does good. Sometimes benefit is permanent; more often it only lasts a month or a few months, and the patient may get tired of having it repeated. I shall consider the methods of dilatation after describing spasmodic dysmenorrhœa.

(*b*) *The curette and caustic.*—In this disease, the endometrium is in a morbid state, which is probably inflammatory. The rational way of curing a chronic inflammation of the endometrium is by scraping it away, and applying a strong caustic, such as nitric acid. This line of treatment is so reasonable that in a bad case it is worth a trial. But it often fails. Electricity has been used for membranous dysmenorrhœa. It does no good.

4. **Radical treatment.**—This consists in the stoppage of menstruation by spaying, or by hysterectomy. It is plain that if the sole disease is painful menstruation, this is stopped when the menopause arrives. If the menopause is artificially brought about early, the patient is as effectively cured as by the natural menopause.* This treatment is rarely indicated, because the pain is seldom bad enough to make a sensible patient think the consequences of the artificial menopause worth incurring.

* Dr. Champneys (op. cit., p. 56) quotes a case by Mr. Doran, which he says "shows the other side of the picture." On reference to the original I find that Mr. Doran expressed doubt whether the ovaries had been removed.

CHAPTER XLI.

SPASMODIC DYSMENORRHŒA.

The two kinds of dysmenorrhœa which have been described in the preceding pages can be identified with certainty. The narrowing of the canal in the first class, the membrane in the second, settle the nature of the case. The cases that I now have to describe, in which there is no obstruction, and no solid substance is known to be passed, are the worst cases in which menstruation is very painful. In these cases the first question is this: Is the pain due to uterine contraction, or to pelvic congestion? If we think it is due to uterine contraction, then the question comes, Can it be cured?

What is spasmodic dysmenorrhœa?—This disease is so called because it is believed that in it the uterine contractions which accompany menstruation, instead of being, as in health, slow and gradual, are "*spasmodic*"; that is, violent, sudden, and painful. That they are sudden and painful is inferred from the character of the pain. That they are violent is believed because, when the disease persists long, there is hypertrophy (not dilatation) of the body of the uterus.

Old names for spasmodic dysmenorrhœa.—This disease has been called "*neuralgic dysmenorrhœa.*" All pain is, in a literal sense, neuralgia—*i.e.* nerve pain. Hence, although this term is not incorrect, yet it is too comprehensive. We want a word which will denote this form only. This disease has also been called "*obstructive dysmenorrhœa.*" I have described real obstructive dysmenorrhœa, and have given reasons for rejecting, as causes of it, congenital strictures and flexions, once supposed to be its common causes. The great reason why spasmodic dysmenorrhœa was supposed to be obstructive was, that it was found that it was cured by means designed to remove obstruction. Hence it is necessary to consider the theory of the disease.

Theory of spasmodic dysmenorrhœa.—There is a property of the uterus which is called "*polarity.*"* This means that there is an antagonism between the body and the cervix uteri. This is seen during labour; weak pains and an unyielding cervix go together; when the cervix is dilated, pains become regular and strong. After delivery, in "hour-glass" contraction (or "relaxation," as Matthews Duncan more correctly called it) the cervix uteri is contracted and the body relaxed. When the cervix is dilated the body contracts. In spasmodic dysmenorrhœa it is believed that the want of physiological relaxation of the cervix prevents normal regular painless contraction of the body. When the circular fibres of the cervix are temporarily paralysed by stretching, then the body contracts in a normal way. In spasm of the male urethra, a large catheter can easily be passed. So in spasmodic dysmenorrhœa, a bougie as large as the cervical canal will usually admit can be passed through it. (The parallel does not hold throughout, for this reason: that the contents of the uterus are expelled by its own contraction, while those of the bladder are not.) This pathology rests upon inference only. No observations have yet been made which show that the uterine canal in spasmodic dysmenorrhœa during the pain is any smaller than the uterine canal of a patient who is menstruating painlessly. But we know that there is no organic narrowing; that the canal is large enough to let the menstrual blood pass, and always does let it pass.

The os internum is abnormally sensitive. The passage of a bougie along it causes more pain than in a healthy patient. As the disease is not fatal, the state of the os internum has never been examined anatomically, and therefore we do not know why it is sensitive.

Diagnosis of spasmodic dysmenorrhœa.—In spasmodic dysmenorrhœa there are no physical signs, except the hypertrophy of the uterine body which may result when it has lasted very long. There is no peculiarity about the uterus or the genital organs, or any other part of the body, from which we can say that the pain is spasmodic, or even that there is pain at all. Various shapes of the cervix (conical,

* *See* Champneys, *Obst. Journal*, vol. vii.

etc.) have been described in old books,* and figured as causes of dysmenorrhœa. But those who took these shapes of the cervix for causes of dysmenorrhœa did not inquire how often they are met with in patients who menstruate without pain. The diagnosis of spasmodic dysmenorrhœa has to be made from the characters of the pain and the history.

Characters of the pain.—They are these:—(*a*) *Great severity.* Thus looking over my own casebooks, I find one patient who said she sat up all night with the perspiration dripping from her; others have said they rolled about upon the floor, or rolled about in bed; sometimes the patients faint, about one-fourth of them vomit. The pain is far more severe than any other kind of menstrual pain. Judge of the severity of the pain, not by the words the patient uses to describe it, but by effects of it manifest to others, such as vomiting, sweating, fainting, restlessness, etc. (*b*) It is *paroxysmal.* The pain caused by pelvic congestion is a continuous aching; that of uterine spasm comes and goes, in pangs and twinges, like the pains of labour, or after-pains. Each paroxysm is generally described as lasting a minute or two, or five or ten minutes. I suspect that when the longer period is named it is because the time appears long to the patient when she is in pain; but possibly the paroxysm may last as long as this. Sometimes it is not paroxysmal; the uterine contraction is tonic, not clonic. The pain of pelvic congestion is generally remittent; but its attacks last longer—two or three hours, not two or three minutes, as in spasmodic pain. (*c*) *Short duration.* Often it only lasts a few hours. In one case I treated it only lasted ten minutes, but this ten minutes made the patient vomit. It seldom lasts longer than two days. This holds good of the majority. But long duration of the pain does not show that the pain is not spasmodic. (1) The spasmodic pain may be preceded and followed by pain of longer duration due to pelvic congestion, and the patient in her description may not distinguish between the two kinds of pain. (2) In some cases the uterine contraction is tonic, not clonic. I have notes of some cases in which the pain was continuous, and lasted several days. These are

* *See* Courty and R. Barnes.

exceptional: and it is in them that hypertrophy of the uterine body is most marked. (*d*) *The effect of position.* The pain of pelvic congestion is always relieved, though not always removed, when the patient lies down, and gravity no longer opposes the return of blood from the pelvis. But the pain of spasmodic dysmenorrhœa is not lessened by lying down. Some patients prefer to walk about; attention is thus diverted from the pain; many say they cannot lie down, but roll about on the bed or floor when the attacks of pain come. (*e*) *The seat of pain.* The pain is bilateral, and referred to the lower abdomen and lower back. It is accompanied with tenderness of the skin over the areas supplied with sensory nerves from the tenth and eleventh dorsal segments of the spinal cord. There is often with it aching in the breasts and thighs, especially on the left side; but this is from the accompanying congestion of the pelvic organs, and is not present only during the spasms of pain. (*f*) *Time of pain.* It usually begins suddenly with the flow, often waking the patient up at night. This is very characteristic, but not constant, for the pain may precede the flow, or not come on till after the flow has begun; and it is often preceded by diffused aching from pelvic congestion, which comes on gradually. (*g*) *Relation of pain to quantity.* During the height of the pain the flow is scanty, and when the flow becomes free the pain is relieved. It is not the case, as it would be were the pain due to mechanical obstruction, that the less the amount lost the less the pain. The relation between the pain and the quantity of the flow in spasmodic dysmenorrhœa is not peculiar to it, and therefore does not help in diagnosis. (*h*) *The effect of remedies* helps in diagnosis. The pain of spasmodic dysmenorrhœa is relieved by local warmth—hot bottles, sandbags, etc.—and by alcohol; it is made worse by ergot. The pain of pelvic congestion is also relieved by local warmth, but is made worse by alcohol. The effect of position has been mentioned above.

In short, the characteristic features of the pain are: its great severity, its paroxysmal character, the short duration both of each paroxysm and of the whole pain, and its not being relieved by lying down.

Clinical history.—Spasmodic dysmenorrhœa in two-thirds of the cases dates from the beginning of menstruation. In about one-third it begins suddenly, after years of painless menstruation; but almost always before the age of twenty-five. It may so develop either in a virgin, a sterile married woman, or a fertile woman. We know nothing about its causes. A specialist is hardly ever called in at the beginning, and therefore we can only find out what the patient recollects. I have known it assigned to causes so various that I can only think them coincidences, if they were even that—causes such as chill, wetting of the feet, nervous shock or excitement, over-lifting, accident, etc. There are few women who cannot, if they think hard enough, bring to memory some incident of this kind, at or about the required date. A lady medical writer has said that all dysmenorrhœa could be prevented. I know not how, nor does she say how. Some patients have told me that their first menstruation appeared without their having been forewarned about it; and they blamed this ignorance for their suffering, and their mothers for their ignorance. Mothers ought not to let menstruation be a surprise to their daughters. But I have never yet met a patient who could tell me any definite way in which her ignorance led to harm. It has been suggested that girls thus ignorant may use cold water to check the flow, or may not take the rest which they need if they are suffering. Either of these imprudences may possibly do harm, but I know of no facts showing a connection between them and dysmenorrhœa. In some cases the dysmenorrhœa intermits, menstruation being one month painful, the next month painless. Sometimes there seems to be a definite cause for such intermission; thus one patient of mine from the age of sixteen to eighteen used to "roll herself up with pain" each month. Then she went to Jamaica as nursemaid for seven months. She menstruated without pain while there, but when she returned to England the pain returned. Vedeler* tells of a patient who had no pain except when living in a town (Christiania). When she went to the country, the pain ceased; when she came back to town, she again had the pain. I have had one patient, who had

* "Arch. f. Gyn.," Bd. xxi.

fibroids, and in whom the pain was felt between the menstruations—not at the time. The nature of the pain was shown by its cure, every time that it recurred, by dilatation of the cervix.

Spasmodic dysmenorrhœa and marriage.—It is sometimes stated that spasmodic dysmenorrhœa is made worse by marriage. My experience makes me think this an error. The pain is unaffected by marriage, unless excessive pelvic congestion follows marriage, in which case the pain of pelvic congestion becomes added to the spasmodic pain. Spasmodic dysmenorrhœa is often, but not invariably, associated with sterility. If the patient become pregnant, the dysmenorrhœa is usually cured. Often it is associated not only with sterility, but with absence of sexual desire and pleasure; and sometimes with vaginismus. When, with dysmenorrhœa, sexual desire and pleasure are absent, cure of the dysmenorrhœa will often create them. I cannot say how often this is so, because routine inquiries on this point cannot be made; but I have been told of it often enough to make me sure that it is not coincidence, but cause and effect.

In what patients.—Spasmodic dysmenorrhœa occurs in sensitive women. The subjects of it are often tall, well-nourished, not anæmic, intelligent, but always sensitive and often weak. It seldom occurs in women of what the late Dr. H. G. Sutton used to call the "fibrous type"—women with broad and deep chests, strong jaws, long lips, wide arched (Norman, not Gothic) palates, sound, regular (not crowded) teeth. Sometimes we meet with it in under-sized, thin, weak, pale patients, who are subject to headache and backache, and cannot bear any strain, mental or physical; in such patients cure is unlikely.

Treatment. Spasmodic dysmenorrhœa has no tendency to spontaneous cure. The only natural cure is pregnancy. It is bad for a young girl to have her thoughts dwell on her sexual organs; and, therefore, if the pain is slight, it may be better for it not to be treated. This is especially the case if the patient be contemplating marriage, for this may lead to cure by pregnancy. In such a case, therefore, postpone treatment until sterility in marriage calls for it. Pregnancy does not always cure dysmenorrhœa; but if it does not, no

other treatment consistent with preservation of the function will do so. Treatment being required, that treatment is of three kinds :—

1. General, or medicinal.
2. Local.
3. Radical.

1. General or medicinal treatment.—This is of three kinds :—

(*a*) **Tonic.**—The commonplace advice to "attend to the general health" is good in all diseases; but is seldom required in spasmodic dysmenorrhœa, for most subjects of it are otherwise in good health. The patient should, of course, be advised to live according to the laws of health; and if she be anæmic, ill-nourished, costive, sleep or eat badly, these things should be corrected as in any other patient.

(*b*) **Specific.**—There is no drug that will always in every case remove the pain of spasmodic dysmenorrhœa. Guaiacum will cure some cases. I know not how, nor what cases; but I have no doubt of the fact. Give gr. x of guaiacum resin in half an ounce of honey three times a day, beginning a week before menstruation is expected. The drug that oftenest relieves is antipyrin. If the pain only lasts a few hours, let the patient take immediately it begins one, two, or, if necessary, three 15 gr. doses (each combined with half a fluid drachm of spt. chlorof. or spt. ammon. arom.) at half-hourly intervals. If the pain lasts longer than a few hours let the intervals between the doses be longer. I have not given more than 45 gr. in one day; but I should do so if no ill effect were produced by that dose.

Supposed dangers of antipyrin.—Some people think that the frequent use of antipyrin is dangerous. I have never seen or heard of serious ill-effects from it when prescribed as advised above. It is an analgesic, not a hypnotic. It is true that if a patient is induced to take it carelessly whenever she has a pain or a headache, it is very likely that some day or other she may take too much. But this is not a reason against prescribing it in measured doses once a month. Occasionally it produces a rose-colour rash. Occasionally also it produces symptoms like those of a hysterical seizure: emotional excitement with frequency of pulse. These effects

are not serious. They are due to idiosyncrasy. They should make you cautious in again giving the drug to that patient, but not make you refrain from prescribing it for those it suits.

If antipyrin fails, try phenacetin in 10 gr. doses. I once found exalgin in iij gr. doses succeed when these failed; but further trial has not brought further proof of its efficacy. What I have said about drugs in membranous dysmenorrhœa applies also to spasmodic dysmenorrhœa. Bromides sometimes give a little relief by favouring sleep.

(*c*) **Narcotic.**—That is, opium or alcohol. Sometimes the pain is so severe that the doctor is driven to use an opiate; or the patient to take alcohol in sufficient dose to procure sleep. I mention this to advise against it. If the pain is so severe as this, and cannot be otherwise cured, it is better even to remove the ovaries than to let the patient get addicted to reliance on these drugs.

2. **Local treatment.**—If the pain can be relieved by medicinal treatment, local treatment is not needed. But failure of medicinal treatment does not always make local treatment necessary. The request of a young unmarried girl is not a sufficient reason for local treatment, for she may not understand the reasons against it. Before using local treatment do two things: (1) Judge as to the severity of the pain from some evidence other than the patient's own statement. The pain cannot be very bad if no indications of its presence can be perceived by an onlooker. (2) Explain the nature of the treatment fully to the patient's mother, or to a matron whose advice the patient trusts, so that she may not assent to it without knowing what it is. In married women the accompanying sterility may justify local treatment, even when the dysmenorrhœal pain is slight. Local treatment consists in dilating the cervical canal.

Methods of dilatation.—Three ways of doing this have been practised :—(A) cutting; (B) stretching; (C) wearing an instrument.

(A) **Cutting.**—This has been used to enlarge (*a*) the external (*b*) the internal os. (*a*) *Division of the external os.*—There is no doubt that some cases of dysmenorrhœa can be cured by dividing the external os. When I began to practise it was

the regular treatment, mainly from its being recommended in the great work of Robert Barnes.* He recommended it on mechanical grounds, thinking that menstruation was painful because the cervix was malformed, and the os externum abnormally small. I have already said that these so-called malformations are met with in women who menstruate without pain. The evidence we have is small, but so far as it goes it shows that dysmenorrhœa is not commoner in women in whom the os externum is abnormally small than among women in general. † On the other hand, I have cured patients by division of an os externum which would admit No. 12 bougie. The effect of this operation is, therefore, not mechanical.

Mode of operation.—Some have divided the vaginal portion completely on both sides, some on one side only, some behind. I think if it is done at all it should be done completely. Insert a duckbill or Barnes's crescent speculum, note the length of the vaginal portion, fix the cervix with a hook, and then with ordinary scissors cut through the cervix on both sides, taking care not to cut beyond the vaginal insertion. If this operation is done with clean instruments, and the patient is kept clean afterwards, it is free from danger. Faulty as the theory is, I can from experience assert that this operation cured some patients, but I am unable to define the cases. After I had learned from Matthews Duncan the effect of dilatation, I found that some patients in whom division of the vaginal portion had failed were cured by dilatation of the internal os; and, therefore, I now advise the latter. I have seen cases in which dilatation of the internal os has failed, and division of the vaginal portion, combined with further dilatation, has succeeded. Therefore, in a bad case in which dilatation has failed, I think the vaginal portion should be divided.

(*b*) *Incision of the internal os.*—When dilatation of the os internum with bougies was first introduced, the bougies used to be passed daily, and left in a long time. This protracted treatment was so unpleasant for the patients, and so slow, that Sir James Simpson introduced incision of the os

* "Clinical History of the Diseases of Women."

† *See* Champneys, op. cit., p. 66.

internum with a sheathed knife called a metrotome as a speedier method. In his hands, and those of others, it was often fatal. The uterine arteries enter the uterus at the level of the os internum, and are therefore liable to be wounded. This operation has no advantage over dilatation, and therefore ought never to be done.

(B) **Stretching.**—There are three chief methods of stretching the os internum. (*a*) By the introduction of a two-, three-, or four-bladed *dilator*, the blades of which are separated by a screw. I mention these, because they seem to be fashionable in America and on the Continent. With these instruments the pressure by which the canal is opened up is concentrated on two or more points, instead of being equally distributed; and it is difficult for the hand to appreciate the amount of resistance to stretching when this is done by turning a screw. Such instruments tear rather than stretch. Have nothing to do with them.

(*b*) By the successive passage of *bougies* of gradually increasing size. This is the best way. It was introduced by Mackintosh in 1836, and was taught in London by Matthews Duncan. In some old books bad results are spoken of from this treatment; but they came from the practice, at first customary, of leaving bougies (not always clean) in the cervix for several hours, which is unnecessary. Dilatation with bougies can be done without an anæsthetic at the doctor's house, and the patient can walk home afterwards. But this is not advisable unless there are reasons for it special to the case. The pain is often severe, and the patient ought to be able to rest after it. The operation is better done at the patient's house, and under anæsthesia. Antiseptic precautions should be used in any case. The cervical canal will usually admit No. 6 or 7 bougie to begin with; sometimes it will not, and you must begin with a smaller one. The prospect of cure does not depend upon the size of the canal. I have known a case cured by the passage of No. 8. When the bougie passes the os internum the patient will complain of pain. The bougie is left in the canal, and usually in two or three minutes the pain will have passed off, and the next size can be passed. If the pain has not subsided within, say, ten minutes, the dilatation had better be discontinued.

The dilatation should be carried to such a degree as to stretch the canal, but not to tear it. The operator should feel resistance to the passage of the bougie, and the instrument should be gripped by the canal, but great force should not be used. I know not what is the minimum amount of dilatation that is enough to cure. I think that as a rule up to No. 12 is enough. When I have dilated the cervix under anæsthesia I have always carried it as far as possible without injury. Metal bougies, those sold as Matthews Duncan's, are best; with them a speculum is not needed (Fig. 173). Gum elastic

Fig. 173.—Duncan's bougies.

flexible bougies can be used, but not without a speculum. I have never seen any bad results from this little operation. The worst that can happen, if clean instruments are used, is failure to cure.

I have seen cases in which a slight dilatation was cured for a short time; then after relapse a larger dilatation has produced a longer relief from pain; then yet greater dilatation has procured still longer benefit. But the obstacles to the following up of cases in consulting practice prevent me from being able to assert from large experience that this is the rule.

(*c*) *By tents.*—That is, by putting in the cervical canal a piece of dry laminaria, which imbibes moisture from the canal, swells, and stretches it. (Sponge tents are here unsuitable, for if there is any difficulty in the introduction of a sponge

tent, its tip softens, and then it cannot be passed). The disadvantage of laminaria is that it forces open the cervix with enormous and uncontrollable power. If, as sometimes happens, the os internum will not expand beyond a certain size, the tent swells above and below the os, and great force has to be used to get it out. This is injurious. Such powerful dilatation is not wanted in dysmenorrhœa. I know of no advantage that tents have over bougies in the treatment of this disease.

Prognosis from dilatation.—Generally dilatation cures, sometimes it fails. Failure may be: (1) because the diagnosis is incorrect; or (2) the disease incurable. (1) The menstrual pain may be congestive or neuralgic, not spasmodic; that is, adopting Duncan's use of the word, the case is not one of *true dysmenorrhœa.* Diagnosis is often difficult and sometimes impossible; for you have to make it not from physical signs, but from female phraseology. The patient may have both congestive and spasmodic pain; and you may cure the spasmodic pain, but the patient be disappointed because the congestive pain remains. When diagnosis is doubtful, and both patient and pain are such as justify local treatment, you must dilate in the hope, rather than the probability, of cure. (2) Some cases of spasmodic dysmenorrhœa are incurable. It is difficult to identify these cases before beginning treatment. Assuming that the pain is of the true spasmodic kind (very severe, in paroxysms of short duration, not relieved by lying down) the following are the points which tell against the prospect of cure: (i) Imperfect development of the uterus. If it is short, or if, though normal in length, it is small, and its canal narrow, cure is less likely to follow dilatation than if the uterus were full-sized. (ii) A neurotic patient. If she is very excitable and sensitive; if she has since girlhood been subject to headaches, backaches, and neuralgias; if she is always easily fatigued; if vaginal examination and the passage of a bougie through the internal os produce pain and general disturbance which does not quickly pass off; then the prognosis as to cure of dysmenorrhœa is not hopeful.

In most cases in which the menstrual pain presents the features that I have described as characteristic of spasmodic dysmenorrhœa, it is cured by dilatation of the cervix. In

many the pain never returns. Some become pregnant. Others, although they remain single or sterile, menstruate painlessly until the function ceases. Some menstruate without pain for a few months or years, and then the pain returns, and can be again cured by a further dilatation. In a few, no benefit follows, and you will have to consider whether further treatment should be carried out or the patient be advised to put up with the pain. It is not possible to make exact statements as to the proportion cured, or the duration of the cure, without following the after-history for the greater part of their lives of all the patients treated; and this in London practice cannot be done. The statements I have made I know to be true of some patients.

(C) **Wearing a stem in the uterus.**—This treatment was introduced to straighten anteflexion, at one time supposed to be a disease. Anteflexion, being the natural shape of the uterus, could not be altered otherwise than by a rigid stem inside the uterus to hold it straight. It was found that these stems sometimes cured dysmenorrhœa; and this was thought proof that the theory was correct. But when an instrument that just fills the cervical canal is left in it, the cervix soon dilates until the instrument lies loosely. The stem therefore dilates as well as straightens. When the stem is taken out, the uterus at once resumes its old shape; but if the dysmenorrhœa has been cured it does not return, showing that it is the dilatation, and not the straightening, which removes the pain. In some cases in which dilatation with bougies fails, the more prolonged action of a stem worn in the uterus succeeds. But these are rare; and there are grave objections to the experimental use of this treatment. Stems usually produce hæmorrhage and leucorrhœa. If worn long they cause persistent pain. In many cases they have caused fatal peritonitis. These dangers are minimised if strict antiseptic precautions are used, and if care is taken that the length of the stem is such that its end cannot press upon the fundus uteri. Even then the patient must be kept under close observation while she is wearing the stem lest endometritis should be set up, escape notice, and extend along the tubes to the peritoneum. The cases in which a stem cures after dilatation by bougies has failed are very rare. A stem

should never be used without explanation to the patient of the risk involved and the probability of failure. Its use is hardly ever justifiable in an unmarried woman. A sterile married woman may think the danger and discomfort worth incurring for the possible cure of dysmenorrhœa and sterility. Even in this case you will be wise if you advise the patient to be content as she is, although you may yield to her wish if, having had the dangers explained to her, she yet desires this treatment to be tried.

3. **Radical.** The radical treatment of spasmodic dysmenorrhœa is to stop menstruation by spaying or by hysterectomy. Cases have been reported in which menstruation did not stop after the ovaries were supposed to have been removed. The explanation of these is that the ovaries were not completely removed. In most such cases the operation was done either on account of inflammation or to stop bleeding from fibroids, and in these conditions the parts are often so altered that it becomes difficult to be sure of removing the whole ovary.

Spaying robs the patient of the prospect both of maternity and marriage, for it causes atrophy of the whole generative tract, with shrinking and loss of elasticity of the vagina. Hysterectomy makes pregnancy impossible, but if the ovaries are left behind, does not produce shrinking of the vagina or deprivation of sexual feeling: it therefore does not necessarily unfit the patient for marriage.

Before advising operation be sure that the pain is really due to menstruation and to nothing else. If it is merely neurasthenic or hysterical pain which is worse when the patient menstruates, no operation will do good. Operative treatment is better (more sure and less dangerous) than treatment with stems; and better also than accustoming the patient to the habitual use of narcotics.

CHAPTER XLII.

CONGESTIVE DYSMENORRHŒA.

Monthly pain due to pelvic congestion.—The cases described in the foregoing pages are the only ones to which the term "dysmenorrhœa" applies, if this term be used in the strict sense adopted by Matthews Duncan.

But patients often ask for relief from monthly pain not due to uterine contraction, but to the pelvic congestion which precedes and accompanies menstruation. As this is a part of the menstrual process, I think it proper to call these cases also "dysmenorrhœa," distinguishing them by an adjective which indicates the cause of the pain. The disease is *congestive dysmenorrhœa.*

Kinds of congestive dysmenorrhœa.—Cases in which the menstrual congestion produces more than usual pain may be divided into three groups.

1. *Primary,* in which the pain has been felt since the patient began to menstruate.

2. *Acquired,* in which menstruation has only recently been painful.

3. *Secondary,* in which there are physical signs of disease which accounts for the pain.

What is ovarian dysmenorrhœa?—Cases in which pelvic congestion causes pain may also be divided according to the seat of pain. In some it is diffused over the whole pelvic region. In others the patient points to the situation of the ovary as the seat of pain, so that the disease is monthly ovarian pain. These cases have long been known as "*ovarian dysmenorrhœa,*" and whether this term be correct or not, it is now justified by usage. Ovarian dysmenorrhœa may also be (1) primary, (2) acquired, or (3) secondary. These words have the same meaning when applied to ovarian dysmenorrhœa that they have when applied to congestive dysmenorrhœa.

(1) **Primary congestive dysmenorrhœa.**—In these cases there seems to be nothing wrong except that the pelvic aching, such as in most women accompanies menstruation, is worse than usual. The patient may be otherwise in good health. The uterus is movable; there are no physical signs of any kind. The flow is average in amount. In the interval the patient is well. There seems to be a disproportion between the local suffering and the patient's power of resistance. In most cases it is a manifestation of neurasthenia or hysteria, there being no reason other than the patient's statements to think that she suffers more than most women. I have known a suggestion of removal of the ovaries cause nothing more to be heard of the pain. But a few patients have been energetic, unselfish women, and there was no reason to question their statements that they did suffer much.

Characters of the pain.—In these cases the pain is constant, not paroxysmal. It precedes the flow by some days, often as much as a week; it is worse at the beginning of the flow, and gets better as the flow passes off. It is not so severe as to produce visible effects: the patient does not faint, or vomit, or roll about. It is lessened by lying down, but with effort the patient can keep about in spite of it. It is aggravated by alcohol and by constipation.

Primary ovarian dysmenorrhœa.—The only difference between primary congestive and primary ovarian dysmenorrhœa is that in the latter, when the patient is asked where she feels pain, she puts her finger on a spot about two inches internal to the anterior iliac spine, instead of referring it to the lower abdomen and back generally. The distinction is one of name only.

Etiology.—We know nothing of the conditions which, in some young women make the menstrual congestion especially painful. If it arise from imprudence when the menstrual function began, we know nothing as to what particular imprudence is likely to cause it. Ungratified sexual desire has been invoked as a cause, but the effect of marriage is seldom what would be expected if this were true. I have met with this form of dysmenorrhœa in apparently healthy women, whose history seemed to show that during

childhood and adolescence everything had been done to favour physical development, and who could tell of no exceptional circumstance that had made them ill.

Prognosis.—The effect of treatment is in these cases unsatisfactory. This kind of menstrual pain has no tendency to spontaneous cure. Marriage generally aggravates the pain; time somewhat improves it, familiarity perhaps breeding contempt, or disappointment with attempts at relief leading the patient to cease asking for it.

Treatment.—The only treatment is recumbency during the pain. Do not give narcotics. Tell the patient that nothing more can be done, and then she will accept the inevitable. If she be costive, give laxatives. Advise not removal of the ovaries in young women for this kind of pain, for if menstruation be thus stopped the pain may continue. After thirty-five oöphorectomy may be considered. In a case in which this kind of pain was said to lay the patient up each month, and there was also contracted pelvis, so that the prospect of motherhood was slight, I recommended removal of the ovaries. But the patient, when told what she would sacrifice by losing the ovaries, chose rather to bear the pain. Some years later she came back with an ovarian tumour. It was put to her that, since an operation must be done, she might as well be cured of the dysmenorrhœa and the tumour at the same time. She assented, and both ovaries were removed. Six months after the pelvic pain was no better. Ultimately, however, the pain ceased: returning only from time to time when the patient was depressed in nervous tone.

The best cure is circumstances which help the patient to ignore it. R. Barnes* well says: "Occupation, physical and mental, is the great panacea. 'Something to do!' is the great female cry."

(2) **Acquired congestive dysmenorrhœa.**—In these cases the history is that the patient menstruated with little or no pain till recently; she comes to be treated because she suffers more than she used to during menstruation, but has no trouble worth mentioning in the interval.†

* "Diseases of Women," 1st edition, p. 218.

† See a paper by the author, *Lancet*, 1881, vol. i.

Diagnosis.—The distinguishing marks of this form of painful menstruation are the following:—Diminution in the quantity of the flow, without anything to explain it in the patient's general condition. Wasting or anæmia may make menstruation scanty, but such lessening of the flow is conservative, is not accompanied with pain, and its cause is evident in the patient's appearance. In acquired congestive dysmenorrhœa the patient's aspect is that of health: she is florid. With the decrease in the quantity of the flow there has come increase in the pain. The pain is not very severe; it is constant, not paroxysmal, although it varies from time to time in intensity; it is not definitely localised, but felt in the lower belly and back and down the thighs. It is described as an aching, throbbing, or "gathering" pain. It is lessened, but not removed, by lying down. It begins a day or two before, accompanies, and lasts a day or two after, the flow. It is often accompanied by slight pain in making water, and increased frequency of the desire to micturate. Examination shows no physical signs of disease. The uterus is generally large, because this form of menstrual pain especially occurs in women who have had children; and it may be slightly tender when compressed during bimanual examination.

Causes.—This form of menstrual pain occurs chiefly in parous women, occasionally in the nulliparous, seldom in virgins. It often (like most diseases that affect parous women) goes with sub-involution, but not always. It may be produced by some sudden disturbance of the vaso-motor system, such as a chill, a physical or emotional shock, occurring at the menstrual period and checking the flow; but often the patient cannot tell of any cause.

Prognosis.—This form of dysmenorrhœa, if treated within a few months, can be cured. When cured, it often relapses; but if treatment of the relapse is prompt, it is quickly cured. If left untreated for many months, the duration of the pain each month increases, and it may at length become continuous, lasting from one menstruation to the next; and when it has thus become chronic the effect of treatment is transitory.

Treatment.—The treatment consists in local depletion. (1) *by glycerine*, (2) *by blood-letting*. When (1) *glycerine* is put into the vagina, its attraction for water causes a

transudation of watery fluid from the parts with which it is in contact. I have demonstrated that it has this effect.* The glycerine is best used in the form of pessaries, made of glycerine with enough gelatine to make a solid mass. Let the patient insert one such pessary as far into the vagina as she can each night, or night and morning if necessary. In the latter case let her lie down for an hour after putting in the pessary, lest it should slip out. Warn the patient of the discharge which the pessary will cause. Should you not have at hand a chemist able to make these pessaries, apply the glycerine in plugs of absorbent cotton, each plug about the size of a walnut, and tied round with a piece of string for easy removal. Let the patient saturate one of these plugs with glycerine and use it in the same manner as the pessaries.

2. By *blood-letting*.—This is best done by leeches. In most places a nurse can now be got who can apply them to the cervix. The suction of the leech makes a smaller wound suffice than would otherwise be needed. Let from three to six leeches be applied. If a nurse and leeches be not available, puncture the cervix through a Fergusson's speculum with a pointed knife. Let from four to six ounces of blood flow. If bleeding stop before this amount has been reached, puncture again, and if needful more deeply. If it goes on after enough has been lost, stop it by syringing with hot water.

In the treatment of a case tell the patient to send for the nurse as soon as the monthly pain begins. After the leeches have been applied, let the patient keep recumbent till all bleeding has ceased. The effect will be to relieve the pain, and in a few days menstruation will come on more copiously. If any pain linger on before menstruation and after it has ceased, let the patient use glycerine in the manner described. If this treatment be applied before the dysmenorrhœa has lasted more than six months, the effect of one leeching will probably be that the next menstruation will come on as copiously and with as little pain as when the patient was in health. But it may have to be repeated two or three times. After this the patient may go for months in health, and if the flow then become again scanty and painful, one leeching will again put matters right. I have had patients who have thus

* "Obst. Trans.," vol. xxx.

gone on for years, sending for a nurse once or twice in the course of the year. It is almost needless to add that you should advise the patient to live according to the laws of health, more particularly not to let the bowels be confined; to take no alcohol, and not to incur fatigue.

Acquired ovarian dysmenorrhœa. — In this form a patient unaccustomed to menstrual pain consults you because she has come to suffer from pain in the ovary with each menstruation. You may find the uterus either fixed or movable. If it is fixed, the case is one of *secondary dysmenorrhœa*. If the ovaries and uterus are freely movable, then the case is one of acquired ovarian dysmenorrhœa; that is, it is ovarian pain felt only or chiefly during menstruation. In Chapter VIII. I have described the causes, and treatment of ovarian pain; and acquired ovarian dysmenorrhœa will be found due to one of these causes, and is to be treated according to its cause. It has been said that such pain is because the tunica albuginea is too thick or too tough, so that Graafian vesicles do not burst properly. This is theory; no morbid changes have ever been shown to be connected with either primary or secondary ovarian dysmenorrhœa. Robert Barnes says he has noticed dysmenorrhœa complained of prior to the development of ovarian tumours. I should rather put it, in the early stages of their growth. It is only a small proportion of ovarian tumours that present this history, and we do not know what sort of tumours lead to menstrual pain in their early stages.

(3) **Secondary congestive dysmenorrhœa.**—I apply this term to cases in which the increased menstrual pain is the symptom put prominently forward by a patient who has definite organic disease of the pelvic organs. Under the influence of the menstrual congestion the symptoms of this disease become aggravated. Dysmenorrhœa is not the disease, but one of the symptoms. The diseases from which dysmenorrhœa may arise are described in other parts of this book. It may nevertheless help in practice if I mention here the chief diseases which may make a patient consult you because menstruation is so painful.

1. *Fibroids.* When a woman past thirty-five finds men-

struation getting more and more painful, the growth of a fibroid is a probable explanation.

2. *Retroflexion of the uterus.* This frequently causes menstrual pain. There are a few cases—only a small minority of the large number of women whose uteri are bent back—in which retroflexion causes no other symptoms than dysmenorrhœa and dyspareunia. These can be cured by surgically curing the retroflexion. The methods of doing this are described in Chapter XI.

3. *Pelvic inflammation*, especially peritonitis and the diseases which cause it, the common one being salpingo-oöphoritis.

4. *Chronic metritis.* In this disease the pain is not limited to the time of menstruation, but it is worse when the patient menstruates.

5. *Movable kidneys* often ache more than usual when the patients menstruate.

CHAPTER XLIII.

OTHER KINDS OF MENSTRUAL PAIN.

Rheumatic and gouty dysmenorrhœa.—Sir James Simpson described these diseases. Rigby said that dysmenorrhœa was sometimes due to the rheumatic diathesis. Sir Dyce Duckworth thinks it sometimes comes from gout. I might submit that the distinguishing marks of the gouty and rheumatic diatheses are not very definite; but passing by this point, it will be enough to say that the views of these physicians seem founded only on the facts that they had seen patients with rheumatism or gout who menstruated with pain. No one has ever shown that dysmenorrhœa is more frequent in the rheumatic or the gouty than in women not suffering from either of these diseases; nor has anyone shown how the knowledge that a patient with dysmenorrhœa is rheumatic or gouty helps in treatment.

Neuralgic dysmenorrhœa.—By some old writers spasmodic dysmenorrhœa is described under this name. I restrict the term to cases of monthly pain due, not to the local process, but to the general nervous and vascular disturbance which accompanies it.

Diagnosis of neuralgic dysmenorrhœa.—The characteristic marks are:—(1) The patient comes to you because she is ill when she menstruates. (2) The troubles she complains of are either not at all, or only in small part, referred to the pelvis. (3) They are numerous and multiform. (4) The patients who complain in this way are all of the weak, neurotic type—nervous, unequal to exertion, anæmic, thin, dyspeptic, sensitive, subject at all times to headaches, neuralgias, backaches, &c., which are worse than usual during menstruation. Among the troubles these patients tell of are: headaches, stupor, hebetude, languor, defective power of attention, concentration of thought, and memory, mental confusion, fainting fits, vomiting (without pelvic pain or other evident cause), flatulent swelling of the belly, nervous irritability, delirium, mania, epilepsy, or hystero-epilepsy.

These nervous troubles may be present without any pelvic pain at all; or the pelvic pain may be bad, but overshadowed by the remote symptoms.

Treatment of neuralgic dysmenorrhœa.—I can only indicate the principles of treatment, for these cases need to be looked at rather from the point of view of the neurologist than from that of the gynæcologist. I submit some general rules. 1. If there be, besides the remote symptoms, local pain of a kind that can be cured, it ought to be cured. Thus, in a case of hystero-epilepsy in which my colleague, Dr. Sansom, asked my help, cure of spasmodic dysmenorrhœa helped to cure the hystero-epilepsy.* 2. The remote phenomena are such as are also seen independently of dysmenorrhœa. The treatment which is beneficial when dysmenorrhœa is not present, may be applied when it is present. Vomiting may perhaps be lessened by correcting constipation. Headaches or neuralgic pains may be relieved by aspirin, antipyrin, quinine, cannabis Indica, or arsenic. Excessive reflex irritability may be remedied by the use of bromides. To specify every kind of possible nervous disturbance, and the appropriate treatment thereof, would need a volume. 3. If there are no local symptoms, nothing is gained by local treatment; on the contrary, harm is done by directing attention to the part, and helping the patient (whose imagination is active) to think that there is, or is going to be, something wrong there. During the few years following the introduction of spaying this operation was often done for troubles of this kind. The results are now known to have been most unsatisfactory. Have nothing to do with spaying patients because their nervous symptoms are aggravated by the menstrual molimen.

Intermediate dysmenorrhœa.†—It is a solecism to call a pain that is only felt when menstruation is not present, "dysmenorrhœa." But the solecism is sanctioned by usage. It means pain recurring regularly once a month, but not when the patient is menstruating.‡ Its punctuality, it

* *Lancet*, 1881, vol. i., p. 369.

† *See* Priestley, *Brit. Med. Journal*, 1871, vol. ii., p. 683; Fasbenger, "Zeit. f. Geb. und Frauenk." Bd. i.

‡ *See also* Fehling, "Arch. für Gyn.," Bd. vii.

having a regular time-relation to the menstrual flow, justifies the belief that it is connected with the menstrual process.

Its symptoms.—It comes on at a regular time—*e.g.* a week or ten days or a fortnight—after menstruation has ended, lasts a few days, and then ceases or gets less before menstruation begins; recurring on the corresponding day after the next menstruation. The pain is in most of the cases in the region of the ovary, and is often associated with physical signs indicating inflammation of the uterine appendages—viz., fixation of the uterus, with thickening or lumps behind and at its side.

Their explanation.—We know not the reason for this periodical recurrence of pain. But we know that in menstruating women ovulation is constantly going on, that it probably occurs periodically, and that follicles may ripen and burst at any time in the menstrual cycle. It is reasonable to think that the ripening of Graafian follicles, like every other bodily function, has its own rhythm, and does not widely depart from it. Hence the supposition that this pain depends upon the regular monthly maturation of an ovum. I think this theory best explains the symptom, but as yet it has not been proved. It has been suggested that the ripening of the ovum may be painful because the outer part of the ovary is thickened, either from fibrous growth or organised inflammatory lymph, so that the follicle cannot burst properly. Fehling in one case removed the ovaries, and found that the tunica albuginea was thicker and harder than usual. This kind of intermediate dysmenorrhœa is therefore one of the forms of secondary dysmenorrhœa. But in one case I have known spasmodic uterine pain thus recur in the interval between menstruations, and be cured by dilatation. The reason of this I know not.

Treatment.—Its treatment is that of the disease of the ovary upon which it depends. If it be spasmodic uterine pain: dilatation of the cervix.

CHAPTER XLIV.

AMENORRHŒA—MENSTRUATION SUPPRESSED.

The visible causes of amenorrhœa.—Consider the case of a patient who complains that she does not menstruate.

First *look* at the patient. Some common causes of amenorrhœa are visible—viz. (1) anæmia, (2) wasting diseases, (3) certain nervous diseases. (1) *Anæmia* is seen from the pallor of the skin and mucous membranes. (2) In *wasting* disease the lean appearance will make you ask if the patient has lost flesh; you will be told she has, and if you take hold of a limb you will notice how loosely the skin hangs, from loss of fat that used to be underneath it. (3) In the nervous diseases which cause amenorrhœa the appearance and expression of the face suggest the condition of the *nervous system.*

(1) **Anæmia.**—If the patient is anæmic, that is sufficient cause for absence of menstruation; and unless there are other symptoms pointing to pelvic disease, there is no need to make a vaginal examination. You have to find out the cause of the anæmia. I will only mention the forms of anæmia common to both sexes, and briefly describe the kind especially frequent in women.

The diseases which produce anæmia may be divided as follows:—

a. Idiopathic, *i.e.* those of which we know not the cause.

Chlorosis.

Pernicious anæmia.

Leukæmia.

Hodgkin's disease.

b. Secondary to some definite cause. These causes may be grouped under two divisions:—

i. Deficient nutrition.

ii. Increased waste.

i. **Deficient nutrition.**—Want of food and want of oxygen. In many diseases of the stomach anæmia is a striking feature. In persons who pass their time breathing

bad air anæmia is frequent. Inquire, therefore, into the patient's diet, asking not merely what is supplied to her, but what she eats. Ask how she spends her time, where she lives, and how much time she gets in the open air.

ii. **Increased waste.**—The causes of *increased waste* which lead to anæmia are hæmorrhage and albuminous discharges. Hæmorrhage may come from piles; from scurvy; from purpura; from injury, as in hæmophilia; from the stomach, as in gastric ulcer; from the lungs, or from the nose; and there is a rare form of anæmia due to intestinal hæmorrhage produced by a parasite in the duodenum, the anchylostomum duodenale. Discharges, such as long-continued suppuration, albuminuria, chronic diarrhœa, malignant ulcers, tubercular disease, all impoverish the blood, and so may cause anæmia. These conditions are none of them peculiar to women, but each of them may be the cause of anæmia in a female; therefore, bear them in mind.

Chlorosis is a common cause of suppression of menstruation. It is a form of idiopathic anæmia, that is, of anæmia coming on without known cause. It is necessary to diagnose between chlorosis and (1) secondary anæmia, and (2) the serious forms of idiopathic anæmia, which are incurable. The diagnosis between chlorosis and secondary anæmia is made by inquiry into the previous history. If we find a distinct cause, such as hæmorrhage, want of food, or exhausting discharge, we do not call the anæmia chlorosis.

What is chlorosis?—Chlorosis is a form of anæmia which comes on in young women. A similar condition is sometimes seen in men, but it is so much commoner in women that it is practically peculiar to women. It is limited to the years after menstruation has begun, but before growth is complete. Although we know not its cause, yet we know that it is aggravated by all the conditions which favour the production of anæmia: deficient food, over-work, and want of sunlight. It is generally thought that it is due to a deficiency of blood formation, as if the blood-making organs had not kept pace with the development of the body. The characters of the blood are: (1) Pallor; due to deficiency of red corpuscles, and still more, to a deficiency of hæmoglobin in these corpuscles. (2) The blood is more watery than usual, and the corpuscles

do not tend to form rouleaux. (3) It is said to be deficient in albumen, but this is not quite certain. (4) There is no abnormal proportion between red and white corpuscles, but there is a greater variety in the size of the white corpuscles than in health.

Symptoms.—The symptoms are marked. Owing to the pale colour of the blood, the face, the mucous membranes, and the nails look pale. The complexion is said to be greenish, hence the name of the disease (but it takes an artist's eye to discover the green). Because the hæmoglobin is deficient, the tissues do not get enough oxygen, and the patients are short of breath. The want of oxygen in the tissues leads to deficient oxidation of fat, and hence these patients are usually fat. For the same reason tissues, which ought not to contain fat, undergo fatty degeneration. The muscles become fatty, especially the heart, and this is another reason why the patients are short of breath. When the illness has lasted long, the fatty degeneration of the heart leads to dilatation of its cavities, recognisable by the extension of the dulness and the displacement of the apex outwards. The nervous system suffers, not being nourished by healthy blood. The patients are either somnolent and dull, or they sleep badly and are irritable, but in either case they find mental exertion a trouble. There is muscular weakness, the patients are readily fatigued, and effort is a burden. Neuralgic pains in the limbs are common. The deficient amount of oxygen which the blood carries to the tissues makes it needful that more blood should go to them. The blood being more watery, is not detained so long in the capillaries, and hence the heart's action is quickened.* The vessel walls, not being supplied with healthy blood, are imperfectly nourished, and hence serum more easily transudes through them, and there is œdema. In some cases there is more than this, there is hæmorrhage, and if this occur it aggravates the disease. The patient cannot afford to lose blood, and therefore the amenorrhœa is conservative and beneficial.

In every case of apparent chlorosis examine the chest and take the temperature. Always bear in mind the possibility of commencing phthisis or of pleuritic effusion. Make certain

* "Cohnheim," vol. i. p. 457.

also that there is no enlargement of spleen or of lymphatic glands. There are certain auscultatory phenomena present in chlorosis:—1. The bruit-de-diable, a continuing humming noise heard over the jugular vein. 2. A hæmic murmur heard with the cardiac systole over the junction of the second left costal cartilage with the sternum. A similar murmur may be heard over the heart's apex. There are other murmurs, tricuspid and aortic, which are more rare. These murmurs can be distinguished from one due to valvular disease by this sign: a hæmic murmur is louder when the patient is lying down, but the murmur of valvular disease is louder when she walks about. Appetite is bad. Gastric juice is deficient, hence food is badly digested, and there is epigastric pain after food. The urine is, as a rule, copious and of low specific gravity. There is constipation.

Opinions differ as to whether the gastro-intestinal symptoms are the cause or the effect of the anæmia. Dr. William Hunter thinks that pernicious anæmia is due to ptomaines, produced in the intestine by micro-organisms. He says:* "The special factor required to initiate the symptoms peculiar to the special disease—pernicious anæmia—is the presence, under certain favourable conditions, of organisms of specific nature within the gastro-intestinal tract." These favourable conditions may, he thinks, be either local and permanent—cancer, gastritis, atrophy of gastric glands—or general and removable—an unhealthy condition of mucous membrane of stomach and bowel, induced by presence of parasites, or prolonged bad nourishment. Sir Andrew Clark† thought that "the anæmia or chlorosis of girls is brought about for the most part by fæcal poisoning." He says that "it is impossible to doubt that poisonous alkaloids are formed in the alimentary canal, that when excretion is seriously diminished they must be in some degree absorbed, and that mixing with the blood and entering the tissues they must produce some sort of injurious effects." The truth of this view he thought proved by the success of cathartic treatment, under which, in from one to three months, the patients got well, while he had seen

* "Proc. Med. Soc. Lond.," xii. p. 392.

† "Proc. Med. Soc. Lond.," vol. xi. p. 55.

iron, arsenic, and manganese fail when not accompanied with aperients.

Whether it be true or not that micro-organisms in the bowel are the cause of chlorosis (and we have no knowledge as to what the organisms are, or where they come from, if they exist), there is no doubt that these patients are generally costive and that purging does them good.

Treatment.—The treatment of chlorosis consists in fresh air, light, food, iron, and laxatives. All energy comes from the sun. Girls and plants alike get white when cut off from sunlight. Tell the patient to be in the open air as much as possible. Thus her blood will be coloured by the sun, and she will get more oxygen into it than she would do in a hot room. Exercise will do good if the patient can take it, but the condition of the heart, the shortness of breath, and the state of the muscles make the patient unfit for exertion. Prescribe therefore only as much exercise as the patient can take without fatigue. If she is to be in the open air, but not active, insist that she be warmly clad.

The capricious appetite and the impaired digestive power of the chlorotic make it necessary for you to inquire what and how much food the patient is taking, and to see that the diet contains enough nitrogenous food. These patients generally dislike meat. Other things they will take without medical commands. Often the appetite is fanciful. Remember that an article of diet which is not itself of much nutritive value may yet, if the patient likes it, be useful by promoting appetite; and therefore forbid nothing unless plainly injurious. Let the patient drink plenty of fluid, for thus elimination of waste matters is helped. Alcohol is not required (unless for some reason special to the case) and is usually not desired.

Iron must be given in a form that does not interfere with digestion, and had better be given in a palatable form. I think the ammonio-citrate best meets these requirements and it can be combined with an alkaline carbonate which will promote the secretion of gastric juice. A little spirits of chloroform will make it pleasant to take. Reduced iron, given in pill, is a satisfactory form.

If the views of Sir A. Clark and Dr. Hunter as to the

production of anæmia by ptomaines formed in the bowel be correct, purgation is the chief point in the treatment, and it does good. The best purgative is sulphate of magnesia. The combinations in which this may be given are many. A common and favourite prescription is the following:—

Ferri sulph., gr. ij;
Acid sulph. dil., ♏v;
Mag. sulph., ʒj;
Spt. chlorof., ♏xx;
Aq. menth. pip, ℥j;

Under this treatment the disease gets well.

(2) **Wasting diseases.**—Consider now a patient who you can see is not anæmic, but has become very thin.

All diseases that cause wasting of the body at length stop menstruation. This amenorrhœa is conservative. The slight loss of blood in menstruation leaves the body so much the poorer, and if a wasting disease is present the body cannot afford it. Amenorrhœa of this kind does not come on until the disease is advanced and the wasting marked. It has been said that in phthisis there is a pre-tubercular amenorrhœa. I have found that a pre-tubercular amenorrhœa, if it occurs at all, occurs so seldom that in any case in which it seems to have been present, it can only be a coincidence—phthisis happening to follow some other cause of amenorrhœa.

I shall not describe the causes of wasting disease common to both sexes: phthisis, diabetes, caries of bone, protracted febrile illnesses, are the chief. There is one, however, which is a disease almost peculiar to women.

Anorexia nervosa.—Most wasting diseases can be identified by their physical signs: but this one, viz., *anorexia nervosa*, presents no physical signs, and you will not find it out unless you inquire. A patient is brought to you who has amenorrhœa; she is not anæmic; there are no physical signs of disease anywhere, except that she is extremely thin. She has not had any recent acute illness. Unless you inquire you will probably not be told of anything that accounts for her illness. If you inquire you may find that it is a case of anorexia nervosa.

Anorexia nervosa means that the patient will not eat.

Such patients waste extremely. The pulse and respiration are slow, and the temperature is often subnormal. As the patient takes less and less food appetite diminishes, and even loathing for food may come on. When such patients die, no disease is found on *post-mortem* examination, and therefore it need scarcely be said that no physical signs of disease can be found during life. If you suspect the nature of the case, inquiry into and observation of what the patient eats and drinks will reveal the cause of the wasting.

The treatment is (1) to take the patient from home; (2) to feed her. The fact of her being ill from this cause is proof that her home surroundings are not good for her. You may cure her at home, but it will be difficult. Taken from home, and separated from injudicious friends, cure is easy. Let her be waited upon by an attendant of strong will who can be relied upon. Her instructions should be simply to insist on the patient taking food, in small quantities at a time, at short intervals; liquid food first, then ordinary diet. With the aid of a good nurse and isolation, cure is quick and certain. I have said more about these cases in Chapter II.

Gastric ulcer.—There is another disease which occurs oftener in young women during the later years of growth than in any other patients, and which is often accompanied with amenorrhœa, viz. *ulcer of stomach*. I must refer you elsewhere for full information as to this disease, only mentioning here that it is often associated with amenorrhœa. It interferes with digestion, and therefore causes wasting. It often causes hæmatemesis, and by this, as well as by hindering nutrition, makes the patient anæmic. Some have thought that the amenorrhœa brought about the gastric ulceration. I know of no evidence that this is so, nor can I understand how suppression of menstruation should do it. The amenorrhœa may be part of a constitutional state which favours ulceration of the stomach, but we have no definite knowledge of any such state. I think that the amenorrhœa is secondary to the wasting and anæmia which the stomach disease produces.

(3) **Nervous diseases.**—The *nervous diseases* which can be perceived by inspection, are imbecility, cretinism, &c., which delay the advent of menstruation, and melancholia, or other

forms of insanity, which suspend it. Cases of slight melancholia producing amenorrhœa, but supposed by the patient or her friends to be the effect of suppressed menstruation, are not uncommon. You will recognise this condition by the patient's despondent aspect, her cold clammy hand, her pasty complexion, and then inquiry will inform you of her depressed spirits, want of appetite, constipation. She will probably be wasted, but beyond this there will be no physical sign of disease. You may be able to trace back the illness to some emotional shock. Need I repeat that in these cases the suppression of menstruation is an effect, unimportant in itself, of the condition of the nervous system? As the patient improves, if she be young, menstruation will almost certainly be re-established, and its re-establishment is a signal of recovery. But the artificial production of bleeding from the uterus has no beneficial effect in this condition. Therefore use not local treatment. There is another disease, usually visible, which sometimes causes amenorrhœa, viz. *exophthalmic goitre*. The protruding eyes, the pulsating carotids, and the enlarged thyroid, are usually plain enough to prevent the disease from being overlooked. In this disease there is wasting, and the amenorrhœa may be the result of the wasting. It may be that the condition of the thyroid gland which produces the other symptoms also causes amenorrhœa. I know of no research into this point. Although it is usually apparent at a glance, yet there are cases in which the proptosis, or the thyroid enlargement, or both, are absent. If you should have a case of amenorrhœa with rapid pulse and vague nervous symptoms, remember that this disease may be the cause. For full information I must refer you to other works.

Amenorrhœa with imperfect circulation. — There is another class of visible illness associated with amenorrhœa, or, to speak more accurately, postponement of menstruation. We see girls whose health previously has been good, but in whom menstruation is late in coming on. The breasts have begun to enlarge. These patients are not anæmic; their cheeks and mucous membranes are of good colour; their features are puffy, lips and alæ nasi thick; their hands are red and cold; their feet are cold; they complain of constant headache, of backache and lower abdominal pain, and of

drowsiness, dulness, and languor; they are costive. Their aspect suggests what used to be called plethora, that is, too much blood. We know now there is no such thing as a permanent excess of blood; but it looks as if the blood found difficulty in getting through the capillaries, and stagnated in the tissues.

Dr. West says that this state passes into chlorosis. I have not observed this. My experience is that such patients get well. The best treatment is to give saline purgatives, which cause a flow of serum from the blood into the bowel, and so make the blood more apt to take up the plasma which seems to be clogging the tissues. This is a hypothetical account of the pathology of the disease and the effect of the treatment. We really *know* nothing about it. The close resemblance between this state of things and myxœdema suggests the giving of thyroid extract in these cases. I have seen cases in which it was given with improvement.

It seems to me as if this and some other morbid conditions — *e.g.* Raynaud's disease — indicate defects in the function of the vessels. Here they seem not to let the blood get through them properly. In other cases they let the blood get through them too easily, hence the epistaxis so frequent in the young, and the cases of dangerous uterine hæmorrhage without any evident disease which are seen in young girls. In old age we see similar symptoms from degeneration of the vessels, *e.g.* the hæmorrhages of Bright's disease.

Amenorrhœa with apparent good health.—Consider now a different case. The patient is not anæmic, nor wasted, nor does her face indicate any nervous disease. She looks in perfect health.

Three things are possible:—

1. She may be pregnant.
2. The menstrual blood may be retained.
3. The menstruating organ may be imperfect in development or have atrophied.

Inquire whether she has, until this period of amenorrhœa, menstruated regularly. If she has, the two latter causes may (except in some uncommon circumstances, which I shall afterwards mention) be dismissed. If she has previously

menstruated regularly, is between twenty and forty, and healthy in appearance, pregnancy is probable. If she has never menstruated, it is still possible that she may be pregnant, but one of the other causes mentioned is the more probable explanation. Women who have become pregnant while living in wedlock will comparatively seldom consult you about amenorrhœa. In those who are not married the diagnosis is more often called for, is important, and sometimes difficult.

THE EVIDENCES OF PREGNANCY.

The signs upon which you rely in giving an opinion are different according to the duration of the pregnancy. Consider first the case of a woman who, after menstruating regularly, has seen nothing for five months or more. To give a right opinion you must examine the abdomen. But in the case of an unmarried woman a request to do this may give offence. Therefore, ask to examine the chest. In doing this you can see the breasts, and from them you can judge whether pregnancy is probable. Fortunately it is just in the very cases in which the suggestion of suspicion is most undesirable, that is, in first pregnancies, that the breast signs are the most trustworthy. What then are the changes in the breasts which denote pregnancy?

The mammary signs of pregnancy.—1. The increased size and vascularity of the breast, the latter being shown by the size and number of the veins visible. There is multiplication by budding of the glandular acini. The connective tissue is increased, and is looser, and therefore the glandular lobules move more freely upon one another, and the breast feels knotty. 2. The greater width of the areola. The width from the nipple outwards is usually from an inch to an inch and a half; but cases occur in which it ranges from a quarter of an inch to three inches. 3. The darker colour of the areola. The depth of colour varies according to the patient's complexion. It is darker in brunettes than in blondes. It gets darker as pregnancy goes on. 4. The presence of the secondary areola; light spots on the dark ground of the outer part of the areola. This is a late and characteristic sign. 5. The larger size of the nipple, the enlargement of the glandular

follicles round it, and the presence of branny scales on its apex. 6. In the latter half of pregnancy fluid can be squeezed out of the nipple. The fluid is at first opalescent: towards the end of pregnancy containing creamy droplets.

The size and vascularity of the breast, the size and colour of the nipple and the areola, present differences only of degree from the unimpregnated state, easily recognised when well marked, but not always well marked. The most characteristic change, not found in the unimpregnated state, is the secondary areola, the white spots on a dark ground, or as Ramsbotham describes it, "a reticulated appearance around the areola, produced by dark brown lines, and the edges are deeply scolloped." He says: "This reticulated and scolloped appearance increases in intensity till the termination of pregnancy, when it is very discernible; it is strikingly distinctive of pregnancy, is seen in no other condition of the system; and were I to point out one external symptom to be relied on beyond the rest, I would select these reticulated and scolloped or annular lines around the margin of the areola. But, unfortunately, they are not evident until more than the first half of pregnancy has passed, and are only very strongly marked towards the close."

Value of the mammary signs. — These breast signs, after lactation is over, subside; but they never entirely disappear. A drop or two of fluid may be squeezed out of a breast many months after its owner has ceased to suckle. Hence the mammary signs are of no value whatever in the diagnosis of any pregnancy except the first. They have no value unless well marked. Just as some women have much milk and others hardly any, so the mammary changes which indicate pregnancy are sometimes well marked, sometimes not. The size of the breast and nipple, and the colour of the areola, differ in different women. Some exceptional women who are not pregnant have larger breasts, darker and wider areolæ, and larger nipples than some exceptional women who are pregnant. But when you are consulted by a healthy-looking young woman, known to have never had a baby, whose belly is big, and on uncovering the chest to listen to the heart you find the mammary changes of pregnancy *well marked* you need not be afraid to ask leave to examine the

belly, and if it be refused, to say that you suspect the patient is pregnant. If on the other hand you find the mammary changes not well marked, do not conclude that the patient cannot be pregnant. If other symptoms make you suspicious, suspend judgment until you have examined the abdomen.

If the patient be a married woman, you can simply ask, Do you think you are pregnant? If the patient is in doubt, and wishes for as full information as can be given, propose an examination, first by the abdomen, then by the vagina.

If the patient be unmarried it is unwise to give an opinion before certainty is possible. If the amenorrhœa be not of longer date than four months, merely say that there is nothing serious the matter, and give a harmless tonic. If you are pressed for an opinion, and the condition of the breasts indicates pregnancy, ask leave to examine the abdomen. If the amenorrhœa has lasted for more than four months the fœtal heart ought to be audible. If this can be heard, there is no doubt of the existence of pregnancy.

Abdominal signs of pregnancy.—Suppose now that you have obtained permission to examine the abdomen. Make your examination in a quiet room; put the patient on her back and uncover her abdomen. If she be pregnant there will be a tumour, and unless there be some exceptional circumstance about the case, the size of this tumour will correspond to the date of the amenorrhœa.

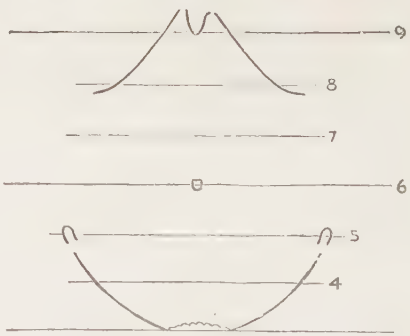


Fig. 174.—Diagram showing the minimum height of the fundus uteri at the different months of pregnancy.

The rate of enlargement of the pregnant uterus is, roughly, the following:—At three months it reaches to the pelvic brim, at six months to the umbilicus, at nine months to the ensiform cartilage. If you divide the intervening space between these landmarks into three, the lines will give you the intervening months. (Fig. 174.) These are easy to remember, and represent the minimum

size which the uterus ought to reach at each month. The actual size varies according to the amount of liquor amnii, and the size and number of the children.

In the second half of pregnancy the *fœtal heart* is audible. If, therefore, you find a tumour rising out of the pelvis, and reaching two-thirds of the distance between the pubes and umbilicus, you ought, if the tumour be a pregnant uterus, to hear the fœtal heart. You may sometimes hear it, if the room be quiet, over a uterus even smaller than this. If the tumour be larger than this, you ought to hear the fœtal heart easily.

The fœtal heart sounds.—The fœtal heart gives a succession of double sounds, not synchronous with the maternal pulse. Its rate is from 130 to 150 per minute. If, the mother being in good health, the fœtal heart is very slow or very quick you may predict the sex of the child. If under 135 the child is probably a male, if over 145 probably a female. The fœtal heart sounds can hardly be mistaken. The only circumstance that can cause doubt is when, from excitement or some febrile condition, the mother's pulse is so rapid as to be about as quick as a fœtal heart. In such a case, one important character of the fœtal heart-sounds, viz. their not being synchronous with the maternal pulse, may be hard to make out. Remember that the fœtal heart-beat is double. The pulsation of the abdominal aorta gives only a single sound. If the maternal heart be like the fœtal as to frequency, there will be variations in the frequency of each, and they will not vary together, so that by prolonged auscultation you can distinguish them. When you have heard the fœtal heart you know that the patient is pregnant. Infer the duration of the pregnancy from the size of the uterus and the date of the amenorrhœa.

The uterine souffle.—But the child may be dead. If so, you will not hear the fœtal heart; but in trying to hear it you will hear the *uterine souffle*. This is a blowing sound, synchronous with the maternal pulse. It is heard during the second half of pregnancy over the uterus, generally low down and at the side; but not always in the same place. It is more commonly heard on the left side than on the right, because it is common for the uterus to lie with its left side more forward

than its right.* It varies in loudness; it may be musical, and it may be felt as a thrill.

The sound was called by its discoverer, Lejumeau de Kergaradec,† the "*battement simple avec souffle.*" Someone afterwards introduced the error, which has lived long, of calling it the "*placental* souffle." It is certain that it has nothing to do with the placenta. It is heard when there is no placenta, and in pregnancy it continues to be heard after the placenta is expelled. It is not affected by position, or by pressure with the stethoscope, but it undergoes peculiar changes in loudness. These correspond with contractions of the uterus, and are evidence that the tumour is in the uterus. The uterine contractions can be felt with the hand which supports the uterus opposite to the stethoscope, and sometimes they can be seen. While the uterus is contracting the murmur gets louder. When the contraction has reached its height the murmur gets softer. As the uterus relaxes again the murmur gets louder, and when the relaxation is complete the murmur becomes softer. The explanation is, that the murmur is produced, like cardiac murmurs, by the blood flowing out of small channels into larger ones. It is louder when the surroundings of the vessels are in process of change. The uterine contractions, by compressing the veins, help on the circulation, and so make the murmur louder.

A blowing murmur rhythmically varying in loudness is heard only over a *uterine* tumour. It is heard over a uterus which contains a fibroid or a mole, as well as one which contains a fœtus. It therefore tells us that *the tumour is uterine*, nothing more. My impression is that this murmur is heard over uteri containing large interstitial or submucous fibroids, but not over subperitoneal fibroids: but I do not assert that there may not be exceptions to my limited experience.

A blowing murmur may be heard over the uterus with an extra-uterine pregnancy. It is not heard over the sac which contains the fœtus. It is so seldom heard with extra-uterine pregnancy that the absence of this souffle has been erroneously asserted to be a sign that pregnancy is extra-uterine.

* See Champneys, "Obst. Trans.," vol. xxvii., 1886.

† "Mémoire sur l'Auscultation appliquée à l'Étude de la Grossesse."

A blowing murmur may be caused by the pressure of the stethoscope, although this is not often the case in the abdomen. Such a murmur does not present rhythmical variations in loudness.

Diagnosis of pregnancy when child is dead. — The diagnosis between a uterus which contains a fibroid and one which contains a dead child is sometimes difficult. The uterus may contain both, in which case the diagnosis is still more difficult.

The following points are the important ones:—

The shape.—The pregnant uterus is a regular ovoid. In a uterus with fibroids there are rounded lumps and bosses, making the tumour irregular in shape. If the latter feature be present the diagnosis of fibroids is easy. But fibroids do not always make the uterus irregular in shape; a fibroid uterus may be as regular an ovoid as a pregnant uterus. A uterus containing a child, with the usual quantity of amniotic fluid, is a soft, elastic, egg-shaped swelling (the small end of the egg being downwards), within which, on palpation, the outline of the child can be perceived—the large hard round mass of the head, the smooth resisting surface of the back on one side, the little knobs formed by the limbs on the other. If these things can be felt, the diagnosis is not difficult. But if the child be dead and decomposing, its parts will not be felt with the same ease. The liquor amnii may be deficient, and after the death of the fœtus some may be absorbed. In that case the lumps formed by the fœtal head and limbs will not be movable inside the uterus, and the uterus will be moulded to the shape of the fœtus, so that it will not be of the regular ovoid shape that it has in a healthy pregnancy. Large fibroids are not often met with in young women. Women in middle life are often fat, and in a fat woman, especially if she be nervous, it may be difficult to define accurately the outline of a tumour. For these reasons, in some cases we cannot tell from abdominal palpation whether a uterine tumour is a fibroid or a pregnant uterus.

Rhythmical uterine contractions.—During pregnancy the uterus is continually alternately contracting and relaxing. Braxton Hicks* was the first to point out that these

* "Obst. Trans.," vol. xiii.

contractions are regular and rhythmical; others before him had observed them as the result of stimulating the uterus. They can be felt as soon as the uterus is big enough for it to be so grasped that the difference of consistence can be felt. To feel them, lay the hand on the uterus without friction or more pressure than that necessary for full contact with the uterine body. The uterus, if relaxed at first, will be felt to become firm; if firm at first to become flaccid. Keep the hand on the uterus from five to twenty minutes. The interval between the contractions is seldom as long as twenty minutes, they generally occur every five or ten minutes. sometimes even twice in five minutes. The duration of each contraction is from two to five minutes. If the uterus is irritable or has been irritated, contraction may last longer, or be almost continuous. When contracted the uterus is round, firm, solid, and the outline of the fœtus cannot be felt. As the contraction passes off, the uterine wall becomes softer and its outline indistinct; it may get so soft that its outline can scarcely be made out at all, and in a hasty examination of the belly the presence of the pregnant uterus might not be noticed. As relaxation becomes complete, the shape of the fœtus becomes more and more distinctly felt.

These contractions are not, in health, painful; and therefore they are not noticed by the patient. They go on up to the time of labour, and whether the child be living or dead. They are useful in two ways: (1) The intermittent compression of the veins helps the circulation; and (2) these contractions help to adapt the fœtus to the long axis of the uterus, and push its presenting part into the pelvic brim. The contractions continue after delivery, and are then known as "after-pains."

Similar contractions occur not only when the uterus contains a child, but when it contains a mole or a tumour. A uterus enlarged by either a submucous or an interstitial fibroid may thus contract if there be a layer of muscle outside the new growth. Not every enlargement of the uterus presents these rhythmical contractions; hard sub-peritoneal fibroids do not do so.

No tumour is found in the belly that alternately contracts and relaxes in the way described except a uterus enlarged

by something within it. If the growth within it be a soft fibroid, long-continued lessening in size may be produced by galvanism or by ergot. The only other abdominal tumour that can be made smaller by galvanism is an enlarged spleen; but this does not present regular rhythmical contractions.

Regular rhythmical contractions when present in a tumour prove that it is uterine. Their absence proves nothing.

Ballottement.—This means the sensations felt on pushing a solid body floating in fluid. There are two sensations: (1) when the solid body is pushed it moves away from the finger; (2) after a second or two the solid body moves back and gently strikes the finger that pushed it. The latter is commonly called the "*choc-en-retour*," or "return shock." To get this sign there must be enough amniotic fluid for the fœtus to move about freely. Hence it cannot be got during the last two months of normal pregnancy. It is also necessary that the child should be big enough to give a shock strong enough to be felt through the uterine and abdominal walls; and the fœtus is not big enough for this till the second half of pregnancy. Hence this sign, superfluous in normal pregnancy, is only useful when the child has died in the sixth or seventh month, or the liquor amnii is in excess. In these latter cases diagnosis is sometimes difficult, and ballottement helps. Its presence is not conclusive, as Pajot pointed out, for it has been simulated by a solid lump moving freely in the fluid of an ovarian cyst. But the latter condition is extremely rare; so rare that if you meet with a case in which the history, the blueness and softness of the cervix suggest pregnancy, and you also get ballottement, the probability of error in saying that the patient is pregnant, is very, very small.

How to obtain ballottement.—To get this sign not only must there be (1) a big enough fœtus; and (2) enough liquor amnii; but (3) you must push where the fœtus is in contact with the uterus; (4) you must push on a resistant part of the fœtus; (5) you must support the uterus with the other hand at the point opposite to your push. Such support will prevent the push from only moving the uterus as a whole, and make it possible that you may feel the solid body when pushed across strike the opposite hand. There are several

ways of practising ballottement. (1) You may put the patient on her back, and a hand on each side of the abdomen. This is not a good way, because the fœtus is usually in the long axis of the uterus, and if so, one hand will be opposite the least resistant part of the fœtus, the limbs; and gravity does not in this position carry the fœtus towards either hand. (2) Put the patient on her side with the abdomen hanging over the edge of the bed or couch, and then with the hand applied underneath, push upwards, and note if you feel a solid body move away and then fall back. You cannot appreciate this fine sensation if your hand is wedged between the abdomen and the bed; therefore the belly must overhang. This is the best method for ordinary purposes, because you get the muscles relaxed, and gravity helps by bringing the fœtus back again on to your hand. (3) You may put the patient on her knees and elbows, and push at the fundus of the uterus. In this position gravity will help the return shock. I know of no advantage in this position over the second one described. (4) Support the patient with pillows in a half-reclining position, so that her uterus may be vertical and her abdominal muscles relaxed. Then with two fingers in the vagina press up the presenting part of the fœtus. This method is the best for obtaining the sign, because the fœtal head is the part usually pressed on. But it is disagreeable to the patient, and not applicable if the fœtus is lying transversely.

I have found ballottement valuable when difficulty in diagnosis was caused by a tumour above the pregnant uterus pressing it down and so interfering with the recognition of the abdominal signs of pregnancy. The absence of ballottement proves nothing.

Softening of the cervix.—The cervix is the part of the womb which can most easily be examined. During pregnancy it shares in the increased vascularity of the genital organs; it gets blue and it gets soft. This softening increases as pregnancy goes on. The consistence of the unimpregnated cervix uteri is that of the tip of the nose; that of the pregnant cervix is that of the lip. When pregnancy is advanced this softening is very marked, and is a most valuable sign. It does not occur in fibroids. Similar softening occurs in the vagina, but is there less easily appreciated. The cervix and vagina

become, instead of the same pale pink as the buccal mucous membrane, a deep bluish purple, and near the vulva, where varicose veins are just below the surface, spots which are almost black will be seen. This change in colour is not produced by fibroids.

The only condition which produces such softening and discolouration of the cervix and vagina is disease causing obstruction to the circulation, such as emphysema and bronchitis, cardiac dilatation, or cirrhosis of liver. These diseases only produce softening and discolouration, like that of pregnancy, when the circulation is *greatly* interfered with, and then there are other signs so marked that they cannot be overlooked, such as difficulty of breathing, dropsy, &c. It used to be said that the cervix became shorter during the later months of pregnancy. The softening of the cervix led to this error; the cervix being soft feels shorter. Dissections show that the cervix does not shorten during pregnancy.* It has also been said that the softening begins at the lower part of the cervix, and extends upwards. There is no evidence of this. The softening is more easily perceived at the lower part because this is more easily felt. It has also been said that the cervix is softer in multiparæ than in primigravidæ. This seems to be so because in multiparæ the cervix is generally split, so that the finger enters the canal and perceives the softening more easily.

The clinical history.—A pregnant woman generally forms her own opinion as to why her belly is getting big from the symptoms which accompany the enlargement. If these are clear she will not trouble you for a diagnosis. In cases of difficult diagnosis, the history is often not clear. Never rely upon the clinical history in the diagnosis of pregnancy.

Amenorrhœa. — The first symptom of pregnancy is

* Weitbrecht in 1750 ("De Utero Muliebri") showed that the cervix uteri did not shorten in pregnancy. The error of supposing that a general shortening of the cervix went on after the fifth month of pregnancy was introduced by Roederer in 1759. Stolz in 1826 again described the real state of the cervix, and his work was introduced to the profession in England by Matthews Duncan in 1853 ("Researches in Obstetrics").

During the last few days of pregnancy the internal os expands, the cervical canal becomes part of the uterine cavity, and the bag of membranes comes to rest on the external os. In primigravidæ this change may take place as early as two months before delivery; but such cases are the exception, not the rule.

amenorrhœa. This is a valuable sign to the patient, because it is the *first* symptom, that from which she dates the pregnancy. It is valuable to the doctor, because, pregnancy having been ascertained, it is a closer guide to the probable date of delivery than examination of the belly alone. But when you have to give an opinion as to whether the patient is pregnant or not, do not let the menstrual history influence you in the least, for the following reasons: (1) A girl may become pregnant before menstruation has appeared. (2) A woman may become pregnant after she thinks that she has passed the climacteric. (3) A patient may become pregnant while she is suckling, and therefore not menstruating regularly. In these instances the usual first indication of pregnancy, the cessation of previously regular menstruation, is wanting. (4) There is no anatomical reason why menstruation should not take place during the first three months of pregnancy, for until the end of the third month the decidua reflexa is not in contact with the decidua vera. It is quite common for a patient to say that she is uncertain as to the date of pregnancy because she has been unwell since the date at which she thought she had conceived. Recurrent hæmorrhage, not enough to cause alarm, may take place throughout pregnancy, either from disease of the cervix uteri, or from separation of chorion or placenta. Cases are recorded and the statement has been copied from book to book, in which menstruation is said to have taken place throughout pregnancy. Patients have told me that this occurred in themselves; but I have never seen one whose account, after close questioning as to dates, satisfied me that a regular monthly flow had occurred. I therefore doubt the fact of menstruation throughout pregnancy; and still more do I suspect a fallacy in the statement, which has also been copied from book to book, that some women menstruate during pregnancy and at no other time. The important clinical fact is, that you must not think that a patient cannot be pregnant because she has been having more or less regular hæmorrhages. (5) There are many causes of amenorrhœa besides pregnancy.

Morning sickness.—This symptom is present in about two-thirds of pregnant women.* When present it usually

* *See* Giles, "Obst. Trans.," 1893.

begins in the second month. It is the symptom by which a patient usually decides for herself whether she has missed a menstruation because she is pregnant or from some other cause. It is therefore a symptom of great value *to her*. But there are so many other causes of vomiting that you must not let the presence or absence of vomiting influence you.

Briefly, the one certain sign of pregnancy is the fœtal heart. If you cannot hear this, you may infer that the patient is pregnant if, the patient being otherwise in good health, there is a swelling in the belly which alternately hardens and softens; over which a blowing murmur is heard rising in loudness while the swelling is becoming hard and while it is becoming soft; and with this the vaginal mucous membrane is blue and the cervix softened.

In case of *pregnancy with fibroid* the uterus may present the irregular outline, and the hard round bosses produced by the fibroid lumps. The amenorrhœa and the coincident enlargement of the tumour will point to pregnancy, and should make you auscultate. If the fœtal heart be not audible, the diagnosis will be difficult, and only to be made by the changes in the cervix and vagina.

These cases in practice do not often cause difficulty, because most patients who are pregnant suspect it, and give you a history of amenorrhœa and recent abdominal enlargement. But you may be consulted about a case in which the age of the patient might explain amenorrhœa, and she cannot tell you the date of the abdominal enlargement. Therefore, the diagnosis of these conditions must sometimes be made apart from the history.

The diagnosis of early pregnancy.—I have described the signs of the latter half of pregnancy. Suppose now that the menses have stopped for less than five months. If the patient be married examine bimanually. You will if she be pregnant feel the enlarged uterus. The cervix will be softened and bluish. The body of the uterus will be symmetrically enlarged, soft and elastic. In the first or second months the difficulty is to be sure that the uterus is enlarged. It is common for the involution of the uterus after delivery not to be complete. If you have not examined the patient before, it

will be impossible to say whether slight enlargement is due to subinvolution after the last pregnancy or to the commencement of another one. Fibroids of the nodular kind will distort the uterus and make it unsymmetrical; but a small fibroid may enlarge the uterus so as to make it in shape and size much like one in which pregnancy has begun. If the uterus be small, certainty may be impossible. The further the pregnancy goes on, the more marked are the signs — the softening and bluish colour of the cervix of a pregnant uterus, the symmetry of its body, while the neck of a uterus with a fibroid remains hard and of the same colour as the mucous membrane of the mouth.

In the first half of pregnancy you can distinguish the enlargement due to pregnancy from that due to subinvolution, or to a fibroid, by the growth of the uterine enlargement at the regular rate of growth of pregnancy. A uterus the subject of subinvolution does not grow at all, and it is infinitely rare to meet with a fibroid growing with the rapidity of a pregnant uterus. Fibroids as a rule cause hæmorrhage, not amenorrhœa; but with a fibroid there may be amenorrhœa. Cancer of the body of the uterus may enlarge it like early pregnancy, but in this disease you are not likely to be consulted for amenorrhœa. In case of doubt whether amenorrhœa is or is not due to early pregnancy, postpone an opinion, and do not say the patient is pregnant unless you find that on re-examination after an interval the uterus has enlarged at precisely the rate at which it ought to have grown were the patient pregnant. But do not deny that the patient is pregnant if you do not observe growth of the uterus, for the embryo may have died and be retained *in utero*. If the uterus has the characters of pregnancy, but does not enlarge, only say that if the patient be pregnant the pregnancy is not going on naturally.

Causes of temporary amenorrhœa.—In young women slight causes, such as change of residence or mode of life, or slight illness, or lowering of health of any kind, may suspend menstruation for a few months. But causes which in a patient whose uterus is fully developed suspend menstruation for longer than two or three months produce other signs of impaired health. Remember that in the first three months

the diagnosis of pregnancy is difficult, and if in an unmarried patient the amenorrhœa has not lasted longer than this time, prescribe some simple tonic, and postpone giving an opinion.

Causes of ill-health, such as chill, shock, fatigue, &c., acting about the time at which menstruation ought to come on, may prevent its doing so, or during the flow may stop it. Such cases are probably due to catarrh of the genital mucous membrane. The catarrh may pass off, or may spread along the Fallopian tubes to the peritoneum. This effect I have considered in Chapters XIV. and XVII. Unless it spreads to the peritoneum and produces perimetritis, such suppression of menses causes no symptoms worth speaking of, and lasts only a month or two.

UTERINE ATROPHY.

The patient may have amenorrhœa because the menstruating organ has atrophied. Atrophy of the uterus injures not the patient's health, and therefore you can only find it out by examination. After forty-five, it is physiological, and the cessation of menstruation thus produced is known as the menopause, or the climacteric. Atrophy of the uterus may take place earlier than this. It sometimes follows childbed, and is then known as puerperal atrophy of the uterus, or superinvolution, the latter inelegant but expressive and shorter term having been introduced by Sir James Simpson. Sometimes it is brought about suddenly by a mental shock. Sometimes it takes place without any discoverable cause, so that we can only explain it as due to unusually early exhaustion of reproductive energy. Sometimes it is induced by removal of the ovaries to cure disease. Consider now these different causes of uterine atrophy, and their consequences.

The menopause.—This naturally occurs between the ages of forty-five and fifty. Leith Napier,* who has given much trouble to the collection of statistics on the subject, estimates forty-seven to be the average age in England. The late Sir Andrew Clark was of opinion that the tendency of civilisation was to make the climacteric later, and his vast experience among the higher classes makes his opinion on such a point important. When the menopause is delayed much beyond

* "The Menopause and its Disorders." 1897.

fifty, the hæmorrhage is generally not menstruation, but bleeding from the uterus caused by disease.

Cause of the climacteric.—The cessation of menstruation is due to the cessation of ovarian function. The function of the ovaries seems to be twofold—(1) to produce ova; (2) to produce secretion, the nature of which we know not, nor its exact effects, but which has some effect. Sometimes this secretion seems to be in excess, and then produces softening of the bones and copious excretion of phosphates in the urine—conditions which form the disease known as osteomalacia, which is cured by removing the ovaries. It seems also as if this secretion rendered the tissues a fitter food for the cancer protozoon, for cases have been published in which removal of the ovaries combined with the administration of thyroid extract has produced surprising diminution and retrogression of cancer in young women. The removal of this secretion is one incident in the climacteric—perhaps the fundamental condition. On this view the disorders which sometimes accompany the menopause have been treated by giving ovarian extract, and benefit has been reported from such treatment. But this preparation has not yet been used largely enough to justify any positive assertion of its value.*

Menstruation during the climacteric.—The cessation of menstruation is sudden, according to Tilt, in about one in seven women. It is usual for one or more menstruations not to come on, then for the usual flow to return for a month or two, then again stoppage of menstruation, with occasional returns at irregular intervals. Hence the period of life at which this occurs has been called the "dodging time." Tilt † took some trouble to estimate the length of this "dodging time," and put it at, on the average, two years and a quarter, the variations ranging from no dodging time at all to ten or twelve years. Not only is menstruation irregular as to time, but its quantity is often not what had previously been usual. In about half, according to Tilt's figures, it is either diminished or increased; the cases in which it is increased are about balanced in number by those in which it is decreased.

Symptoms accompanying the climacteric.—During the

* *See* a case by Fosbery, *Brit. Med. Journal*, April 24th, 1897.

† "Change of Life." 1882.

cessation of menstruation, and for some time after it, certain disagreeable symptoms are common. Among these are *flushings*. Those who like Latin names have called this *ardor volaticus*. These flushes are increased by emotion and by heat. They chiefly affect the face and head, but may also be felt in the limbs. Tilt found by inquiry that they are present in more than half of women at the menopause. The flushing is often preceded by *chilliness*, and followed by *sweating*. Sometimes the perspiration is so profuse as to oblige the patient to change her linen with inconvenient frequency. Tilt found profuse sweating present in about a sixth.

Various skin diseases have been said to be disorders of the menopause, but erroneously. Tilt quotes Sir Erasmus Wilson and Dr. Liveing, who say that "they do not consider women more liable to cutaneous diseases at the change than at any other time." But when such diseases do arise at this period of life, they are harder to cure than in younger patients, because tissue degeneration has begun.

Leucorrhœa is said to be frequent at the menopause; sometimes as a chronic condition; sometimes occurring only at the time when the patient expected to menstruate. Tilt put its frequency at 28 per cent. Napier says that leucorrhœa of the latter kind is present in from 10 to 15 per cent. I accept these statements as representing the facts in the patients who consulted these gentlemen, presumably for some disease; but as representing the frequency of leucorrhœa at the menopause in the female population generally, I think them too high.

Obesity and emaciation.—About the age at which the climacteric occurs, women generally get either fatter or thinner than they were in earlier years. The direction in which change takes place depends upon conditions that we do not understand. This change does not so closely correspond in time to the menopause that it can be regarded as directly due to the cessation of ovarian function: it depends upon age, mode of life, and inherited habit of body. Its relation to the menopause is that of coincidence.

Atrophy of genital organs.—After menstruation has finally ceased, the genital organs atrophy. The uterus

becomes small, the vagina becomes smooth, and its orifice, if it has not been enlarged by child-bearing, shrinks. These changes are not important to women who have been married at the most suitable age; but to women who have been married late, to husbands younger than themselves, they may be.

Nervous disease and the climacteric.—The strain involved in reproduction renders child-bearing women especially liable to insanity. This is proved by the larger proportion of women who become insane during the child-bearing period as compared with women at other ages and with men. The average age at which childbearing ceases in women living in wedlock is thirty-eight; but as some women become widows before this age, the average age of cessation of childbearing in women generally would be rather before thirty-eight. But a great drop in the frequency of insanity in women does not take place till after fifty-five.* It must be therefore admitted that the climacteric brings with it a liability to insanity. This being so, it is not surprising that minor changes in the higher nervous centres should occur.† Depression of spirits, hypochondriasis, and headaches are more common at the menopause than in the years before and after. I know no features special to the headache that occurs at the menopause. It is sometimes the morbid feeling at the top of the head that is associated with neurasthenia and sleeplessness. (*See* Chapters II. and IV.) Sometimes it may be ocular, from commencing presbyopia aggravating already existing errors of refraction. Sometimes it occurs at the time at which menstruation had been expected, and it is then a plausible theory that it is due to non-relief of the increased vascular tension which precedes menstruation. Patients who sleep badly, and whose digestion is bad, are often drowsy by day, and suffer from many subjective symptoms, such as giddiness, backache, variously described pains,‡ and morbid sensations in the belly—subjective phenomena which Tilt described with great elaboration.

Treatment.—The insanity which occurs at the menopause

* See a table quoted by Tilt, on the authority of Sir Charles Hood.

† *See* Savage, "Some Neuroses of the Climacteric Period," *Med. Press and Circular*, Nov. 8th, 1893.

‡ *See* Sir F. Semon, "The Sensory Throat Neuroses of the Climacteric Period," *Brit. Med. Journal*, Jan. 5th, 1895.

is only peculiar to women in its origin, and therefore I attempt not to describe its symptoms and treatment, farther than to say that the great prophylactics of insanity are food and sleep. In a woman at the climacteric, whose history or symptoms rouse apprehension of coming insanity, direct your treatment to making her eat well and sleep soundly and long.

In the treatment of the minor troubles incident to the menopause, the first thing is to assure the patient that these things do not portend loss of life, or reason, or health; that they are natural, and will cease after a few years; that they are like menstruation, one of the trials of her sex that every woman has to pass through. When the patient has grasped this general fact, she will calmly accept the minor symptoms. Ovarian extract has not as yet been used enough to be properly appraised. Thymol, in pill, containing gr. ij thrice daily, has been found useful at the London Hospital. Of the well-known drugs, the best are the bromides, which lessen reflex irritability; belladonna, which contracts the small vessels and checks perspiration, and saline aperients. These may be combined. If the symptoms occur when the patient should have menstruated, are accompanied with pelvic uneasiness, and the patient has a good colour, relief will follow replacement of the absent menstruation by four or six leeches to the cervix, or, if the patient be a virgin, to the groin.

Premature climacteric. — Cessation of menstruation at an age earlier than is normal may be brought about either by shock, mental or physical, or by severe illness, either febrile or wasting. Its most common cause at the present time is the removal of the ovaries by operation. This is done (*a*) when the ovaries are diseased (*b*), to make uterine fibroids dwindle and cease to bleed, and (*c*) to cure certain nervous diseases, viz., epilepsy or insanity. The two first-named conditions are described elsewhere. Patients have been spayed for epilepsy and insanity because (1) in some cases these diseases get worse at the time of menstruation, and (2) they occur sometimes associated with excessive exercise of the sexual function, because persons with badly developed brains are likely both to suffer from epilepsy or become insane, and to be unable to control the sexual instinct.

The experience of most persons who have spayed patients for so-called "menstrual epilepsy," has been, so far as I can find out, unfavourable. Epilepsy is not cured by spaying. The results of spaying the insane have been upon the whole unfavourable. If there be any kind of insanity to be thus cured its characters have not yet been defined.* Therefore I advise against spaying either for epilepsy or for insanity.

Premature climacteric from shock or disease.—These cases are rare. When they occur it is so difficult to distinguish the symptoms due to the stoppage of menstruation from those of the condition which caused the stoppage, that I cannot describe any group of symptoms as due to premature cessation of menstruation. I will only say this, that I know of no way in which disease or the effects of shock are aggravated by premature cessation of menstruation. The only treatment suitable for such cases is treatment directed to the improvement of the condition which caused the premature cessation. I shall speak in connection with puerperal atrophy of the uterus of the special modes of treatment recommended to provoke the uterus to menstruate.

The menopause artificially induced.—The phenomena of the menopause when brought about by spaying at an unnaturally early age have been studied even more carefully than those of the normal menopause. Women will not keep under medical care for what they know to be a natural process, but they will for symptoms which, being a result of their doctor's treatment, they think must be under his control. They are important, because patients for whom spaying has been advised may reasonably wish to know what they have to expect. Glaevecke† has carefully studied these effects.

Effect of oöphorectomy on menstruation.—When the ovaries have been removed menstruation stops. In about two-thirds of cases it stops at once; and in the rest after a few months. It is true there are cases in which after an operation in which the operator thought he had removed the ovaries, menstruation has continued; and one explanation given of such cases is that in them there were

* For 25 cases so treated, see Rohé, *American Journal of Obstetrics*, 1892; summarised in *Year Book of Treatment*, 1894; and Manton, *ibid.*

† "Arch. für Gyn.," Band xxxv.

three ovaries. In my opinion they are either cases in which the operator did not completely remove the ovaries, or cases in which the bleeding was not normal menstruation but irregular hæmorrhage due to some disease of the body or cervix uteri. It is sometimes said that the arrested menstrual hæmorrhage may be replaced by bleeding elsewhere —vicarious hæmorrhage. I shall discuss this in the next chapter.

Menstrual molimina.—The symptoms that may be, and in most cases are, associated with the stoppage of menstruation are of two kinds: (1) those occurring at the time when the patient would have menstruated, had her ovaries been left; (2) those in the interval. (1) Pain, when menstruation should have come on, persists in about half; usually felt in the lower abdomen, especially in the situation of the ovaries, in the lower back and down the thighs. Other rarer troubles are swelling of varicose veins, pains in the breasts, headache, vomiting, flatulent pain, fainting fits, noises in the ears, skin eruptions, etc. These troubles recur especially during the first few months following operation, and then they gradually lessen and cease.

(2) The symptoms which occur in the interval are like those of the normal menopause. Sudden feelings of heat, often with visible *flushing*, are the commonest symptom. It occurs in about three-fourths of cases. These feelings of heat are commonly described as beginning in the epigastrium and going up to the head. They last from half a minute to three minutes. They recur generally about ten or twelve times a day, but the intervals between them are very irregular. They occur also at night, often disturbing sleep. They commonly begin about a month after the operation, and are most frequent during the first three months. The liability to these attacks usually lasts about two years, sometimes longer Attacks of *sweating*, not only after the feelings of heat that have been mentioned, but without them, occur in about a third of the cases. Sometimes they follow exertion, sometimes occur without known cause. *Giddiness* is complained of in about a fifth of such cases. It occurs seldom, usually after exertion, and lasts some minutes. *Palpitation and headache* are less common, having been noted in about a tenth. The

palpitation is not severe. The headache is usually worse when the patient ought to have menstruated. *Leucorrhœa* is present in about a third. This high frequency is probably partly due to the diseases for which the operation was done. It is increased when the patient should have menstruated. As a rule it disappears within about eighteen months.

Effect on the genital organs.—The first effect, we know not why produced, is hyperæmia. There is often hæmorrhage from the uterus. The vagina becomes injected, softened, and swollen, as in pregnancy. The hæmorrhage lasts a few days or weeks; I think longer the bigger the uterus. The hyperæmia of the vagina lasts for two or three months. Then the vagina begins to atrophy. It becomes pale, often showing brown streaks or spots. Its folds become obliterated, and it becomes shorter and narrower. The atrophy goes on more quickly than after the natural menopause. It becomes appreciable in from one to five years. The uterus atrophies; its vaginal portion becomes shorter and smaller. The cervical canal becomes narrower. Diminution in the size of the uterus is marked at the end of three months. It has been shown experimentally by Kehrer that this atrophy is due to removal of the ovaries, and not to ligature of vessels.

Effect on the general condition.—About two-thirds of women who have had their ovaries removed get fat. Depression of spirits is said to follow this operation; but this is not so marked or so constant that it can be put down as an effect of oöphorectomy. Insanity has followed; but it has followed other operations also, and I know of no evidence that it follows oöphorectomy with such special frequency that it can be considered an effect of this particular operation.

Effect on the sexual function. — In most cases sexual feeling is first lessened and then annulled; but this change is gradual and comes on slowly. If by the operation some condition was removed which rendered intercourse painful, the immediate effect may be to create or intensify sexual feeling; but I believe the ulterior result to be as stated above. In nulliparæ the atrophy of the vagina may so contract its orifice as mechanically to hinder coition; but it takes years for the vagina to contract so much as this.

SUPERINVOLUTION OF THE UTERUS.

This means that the uterine involution does not stop at the restoration of the uterus to its former size, but goes beyond this point, and leads to permanent diminution of the size of the organ and arrest of its functional activity. The term "superinvolution" was introduced, as we have seen, by Sir James Simpson, but the disease had been described before him under a name by which it is known in Germany —viz. "puerperal atrophy of the uterus." This term at once denotes its nature and its pathological alliance with atrophy of the uterus occurring in other circumstances.

Morbid anatomy.—German writers* speak of "excentric" and "concentric" atrophy. Excentric atrophy means that the cavity of the uterus retains its natural dimensions, but that the wall of the organ is thinned, so that its external measurements are smaller. Concentric atrophy means that the length and breadth of the uterine cavity are diminished as well as its wall wasted. It is reasonably believed that excentric atrophy is an early stage of concentric atrophy. It is easy to recognise concentric atrophy; but in the case of excentric atrophy it is difficult to say what degree of thinning of the uterine wall should be regarded as pathological, and very difficult to be certain of the existence of slight thinning. Hence statements about uterine atrophy based on cases in which excentric atrophy was the form believed to be present are to be accepted with a consciousness that they may be erroneous. It is said by German authors that some excentric atrophy takes place naturally during lactation; and that after weaning the uterus returns to its normal thickness. It is difficult to be sure of this; for we have no means of measuring in the living subject the thickness of the uterine wall; the fact of thinning only rests upon the impression of slightly diminished size gained by bimanual examination. Judging as well as I can in this imperfect way, I am disposed to think that the German observers are correct. In superinvolution this normal atrophy of lactation goes on to a higher degree, and is permanent. When atrophy has advanced to the

* *See* Sir James Simpson, "Works," vol. iii.; Frommel, "Zeit. für Geb. und Gyn.," Band vii.; Thorn, *ibid.*, Band xxvi.; Ries, *ibid.* Band xxvii.; and Gottschalk, Volkmann's "Vorträge," N.F. 49.

degree denoted by the word "superinvolution," the uterus is smaller in all its dimensions, and its wall is thinner. Its mucous membrane is either absent or very thin; its muscular tissue is thinned, the fibres are closely packed, and it displays among its fibres thrombosed and obliterated vessels.

Etiology.—Certain puerperal diseases have been observed to be followed by atrophy of the uterus. These are: (*a*) Any puerperal illness leading to cachexia; that is, to wasting and anæmia; (*b*) suppuration of the ovaries leading to their destruction; (*c*) pelvic cellulitis leading to fibrous induration, which constricts vessels and so cuts off part of the uterine blood supply; (*d*) inflammation of such severity as to lead to sloughing of the inner part of the uterine wall, the so called *endometritis dissecans*.

These diseases are rare, and recovery from them is rarer still. Puerperal atrophy of the uterus is also a rare disease. Hence the relation between these rare conditions is only supported by very few observations. We know not what are the morbid changes in the ovaries, if any, upon which superinvolution depends.

There are also diseases which may lead to amenorrhœa and atrophy of the uterus apart from the puerperal state, and therefore it seems a reasonable inference that if they occurred in pregnancy they would lead to atrophy of the uterus during the puerperium; but their influence in this way is a probability only, not a fact verified by observation. Among these are phthisis, diabetes, Addison's disease, Graves's disease, myxœdema, insanity, emotional shock, paraplegia.

The foregoing are possible causes. The disease is so rare that no series of cases large enough to place the ordinary causation of superinvolution beyond dispute has yet been published. It is certain that superinvolution sometimes occurs in women in whom none of the causes assigned for it (and enumerated above) has been present; and in whom examination reveals no other disorder of health than that the uterus has undergone atrophy.

Symptoms.—The only invariable symptom is amenorrhœa. Sterility is probably the consequence. But as the essential condition for fertility in the female is the production of healthy ova, and not the state of the uterus (as shown by

the occurrence of pregnancy in a rudimentary uterine cornu), it cannot be asserted that superinvolution directly and necessarily causes sterility. Superinvolution probably depends on ovarian atrophy, although no morbid changes in the ovaries associated with superinvolution have yet been demonstrated.

As the climacteric is produced by superinvolution, the changes and symptoms usual at the climacteric gradually supervene. The breasts waste. The patients complain of the chills, flushes, and sweats which usually trouble women at the menopause. The only other symptoms that I have seen associated with superinvolution are frequent headaches and leucorrhœa. Sir James Simpson* says that superinvolution is associated with "constitutional ill-health," "general debility, depression, and impaired activity of mind." This is no doubt correct, but it is difficult to disentangle cause and effect, and to be sure whether superinvolution is the cause of the ill-health, or the ill-health the cause of the superinvolution. In my judgment the latter view is the true one. I do not think that superinvolution has any symptoms beyond amenorrhœa, sterility, and the usual climacteric disturbances.

Diagnosis of superinvolution of the uterus. — The diagnosis is suggested by the history, which is that of amenorrhœa dating from the birth of a child, and continuing, although the patient has long ceased to suckle. It is made certain by finding out by physical examination the smallness of the uterus. This is done in three ways. (1) By passing the sound. In this way the length of the uterine cavity can be accurately measured. A fallacy attends it—viz., that the sound may not have passed the whole length of the canal. Therefore it needs to be supplemented by methods of determining the size as well as the length of the uterus. Of these, the best is (2) bimanual examination. Thus its size can be well estimated. If this cannot be done, either because from nervousness the patient keeps her abdominal walls very hard, or because she is very fat, then (3) seize the cervix with a hook or volsella and pull it down towards the vulva. Insert a finger into the rectum, and you can feel the whole length and breadth of the posterior surface of the uterus. The

* "Works," vol. ii. p. 602.

smallness of the uterus thus ascertained makes certain the diagnosis of puerperal atrophy.

Treatment of superinvolution.—The only method of treatment which is unquestionably beneficial is the cure, if possible, of any condition of ill-health which there is reason to think may be the cause of the uterine atrophy. If the patient be florid, and the time at which menstruation should occur is marked by uncomfortable sensations, these symptoms may be relieved, and the uterus stimulated, by the application of leeches to the cervix uteri. Cases of this kind are very rare. It is very doubtful whether any treatment will make a uterus that has atrophied again develop. In most cases in which the uterus is small because it never has developed treatment is a failure; and the prospect when the uterus has developed and been functionally active, and then has atrophied prematurely, is far less hopeful. Electricity has been recommended; but I know of no evidence that such treatment is useful. No cases have been reported in which care was taken to distinguish between distinct atrophy and mere amenorrhœa from lactation or some other temporary cause. It is easy in any condition to make the uterus bleed; but bleeding from the uterus is not menstruation.

Stem pessaries, of glass, metal, or vulcanite, have been used. Sir James Simpson recommended a "galvanic stem"—that is, an intra-uterine pessary made half of zinc and half of copper, the two halves lying side by side. When this is put into the uterus, the secretions of the part enable galvanic action to take place between the zinc and the copper; and chloride of zinc is formed, which is a caustic, and inflames the mucous membrane with which it comes in contact. This is injurious. I know of no evidence that the galvanic or any other stem does good; and any intra-uterine stem, however unirritating the material, may produce peritonitis. If intra-uterine stems of any kind are employed, it should only be after explanation to the patient that the instrument is not likely to do good, and involves some risk to life. If she is rightly informed as to the small prospect of benefit from local treatment, the dangers involved, and the unimportance of the effect of superinvolution upon health and duration of life, she will prefer to let it alone.

CHAPTER XLV.

AMENORRHŒA—MENSES RETAINED.

You may find a tumour rising out of the pelvis in a patient who has never menstruated. This tumour may be due to retention of menses. Such a tumour may reach as high as the ensiform cartilage, but in the present day retention of menses lasting unrelieved long enough to produce a tumour of this size is very rare. The fact that the patient has never menstruated does not exclude pregnancy; but the fact that the patient has menstruated excludes retention of menses from congenital malformation.

Symptoms of menstrual retention.—The symptoms of which a patient with retention of menses generally complains are: (1) *pain* recurring once a month, and each month increasing in severity; (2) an increasing *swelling* in the lower abdomen. You are more likely to be told of the pain than of the swelling. The swelling is in the beginning slight, and has often not been noticed by the patient at the time she first seeks advice. The pain is present in most cases. But even with menstrual retention of long duration there may be no pain, and the pain usually present is not severe. Therefore the absence of pain is no proof that there is not menstrual retention. The swelling can be felt by putting the hand on the abdomen. Its size depends on the amount of blood retained.

Abdominal signs.—Put the patient on her back; bid her draw her knees up. Place your hands on the lower abdomen, and talk to the patient. When you begin the examination, as your patient is young, and probably frightened, you will find the abdominal muscles stiff and hard. Get her to talk and think about something else, and you will find the muscles relax, and then you will either feel a distinct swelling rising out of the pelvis, or you will be able to press your fingers deep down into the pelvic cavity.

If there is no history of monthly pain and no abdominal

swelling, it will be clear that there is no considerable quantity of menstrual fluid retained, and therefore no need for immediate further investigation. Certainty that the genital canal is patent cannot be got without vaginal examination. But if

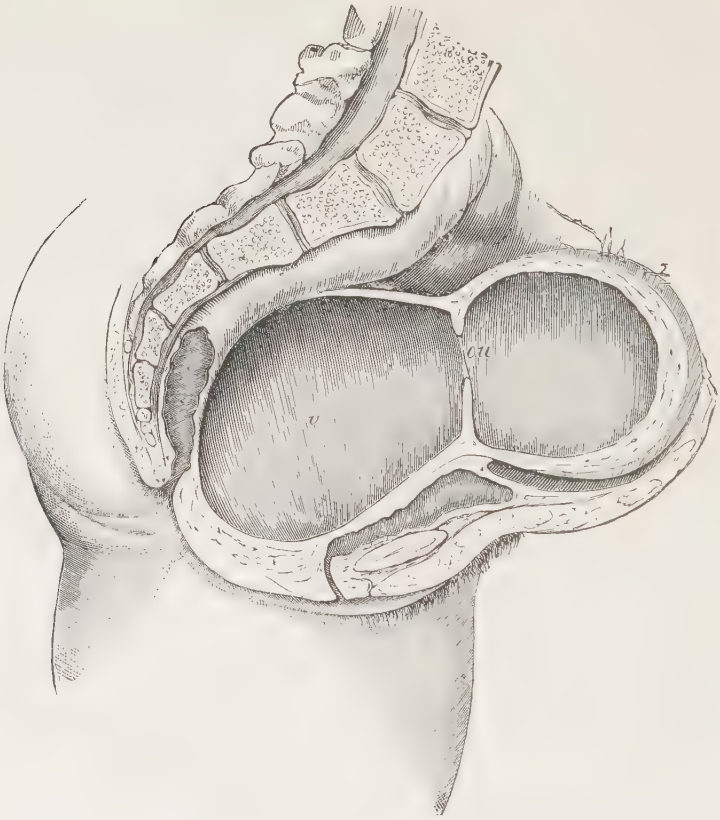


Fig. 175.—Hæmatometra and hæmatocolpos. (*After R. Barnes, from a specimen in the Radcliffe Museum, Oxford.*)

ou, os uteri; *v*, vagina.

you have made sure that there is no immediate need for local treatment, you have done enough; you need not inflict on a young virgin a vaginal examination unless there is some special reason for settling the question at once.

The abdominal tumour produced by retained menses (Fig. 175) is usually formed by the dilated vagina and cervix

uteri, while the body of the uterus is felt like a knob on the top of the tumour. The tumour, except for this, is rounded. It is dull on percussion. You may find it fluctuate, but it is generally not easily brought into close enough contact with the abdominal walls for the wave to be felt. It can be moved slightly from side to side, but not upwards. These characters are not important, because the diagnosis is made by vaginal examination. If you find a tumour rising out of the pelvis, you must examine by the vagina.

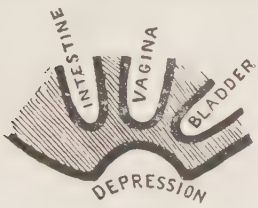


Fig. 176.

Fig. 177.

Fig. 178.

Figs. 176—178.—Diagrams showing development of external genitals and perineum. (*After Auvard.*)

Vaginal signs. — The most common atresia is closure of the vagina by a transverse septum at the lower part of the vagina. Such a septum used to be described as imperforate hymen, but closer observation has shown that it is above the hymen. The formation of such a septum is easy to understand. The vagina is formed out of the ducts of Müller. The vulva is formed out of a depression in the integuments, the genital groove. (Fig. 176.) This, as it sinks in, becomes divided into two: the hinder part meeting the rectum and forming the anus, the front part meeting the urethra and vagina. (Figs. 177, 178.) If the tissue between the rectum and this depression of the integuments is not absorbed, imperforate anus results, and requires treatment in the first few days of life. If tissue between the vagina and the integuments persists, a vaginal septum is discovered at puberty. Imperforate urethra is similarly produced, but is incompatible with life. A septum bulged down by retained fluid is lower down than it was before the menstrual bleeding had taken place. In retention of menses by such a septum, the finger, when inserted between the labia, feels a tense, bulging, elastic swelling. When you separate

the labia and look at it, it is bluish in colour. Its appearance has been well compared to that of the bag of membranes in labour.

The vagina may be closed, not simply by a transverse septum, but throughout the whole or part of its extent by connective tissue between urethra and rectum. The walls may be fused together by a hard cicatrix, as a result of the sloughing which sometimes occurs in the course of febrile disease in childhood.

If the closure be high up, the accumulation of fluid takes place *in the uterus*. The more this organ is distended, the more nearly it approaches the spherical in shape. It does not bulge down into the vulva, like a distended vagina, but occupies the upper part of the pelvic cavity, and if there be much retained fluid, rises above the brim. When the uterus is distended, monthly pain is seldom absent. Owing to the retained blood being under pressure, part of its water becomes absorbed, and it becomes thick like treacle. Often the Fallopian tubes are filled with blood. They may be felt as tender, somewhat sausage-shaped, lumps at each side of, and rather behind, the uterus, the long axis being nearly parallel with that of the uterus. They are generally adherent, so that to the touch the swelling formed by uterus and tubes seems one mass.

Why the tubes contain blood.—The filling of the tubes with blood is not mechanical. It was at one time thought to be so; that the uterus was over-filled with blood, some of which escaped by way of the tubes. But if menstrual blood ever flows along healthy tubes it runs out of the open fimbriated end into the peritoneum, and is absorbed. Two cases have been reported in which this was seen to happen.* In hæmatosalpinx associated with retained menses, the tubes are not healthy; their abdominal ostia have been closed by inflammation. Two explanations of this inflammation may be given. (1) That the menstrual blood has excited inflammation. But a small effusion of healthy blood into the peritoneum does not cause inflammation, as has been shown by the cases just referred to; and if this were the explanation, the hæmatosalpinx should always be bilateral, which is not invariably the case. This view is, therefore, untenable. (2) That the tube was inflamed

* For references see Meyer, "Zeit. für Geb. und Gyn.," Bd. xxxiv.

and its ostium closed before menstruation began. This view is in harmony with the fact that hæmatosalpinx is met with when retention of menses is due to an extensive obliteration of the genital canal. It has been said that the higher in the genital canal is the atresia, the more likely is hæmatosalpinx to be present. Meyer has shown that this is not so. In atresia due to a congenital defect, such as imperforate hymen, hæmatosalpinx is rare; in a broad atresia, wherever situate, it is frequent. A broad atresia is acquired: not congenital. In the conditions shown in Fig. 175 the atresia is a broad one. In some of these latter cases the vagina is blocked by hard cicatricial tissue. In others the obliterated part feels soft and pliable; and hence the atresia has been thought a developmental defect. But septa formed by inflammation after child-bearing are sometimes thin and pliable. Hence the absence of hard scar tissue is no proof that atresia is not of inflammatory origin. If inquiry fails to elicit any facts in the past pointing to an inflammation of the genital organs, that does not prove that none has occurred. Leucorrhœal discharges in children may easily be overlooked, especially when occurring in the course of severe febrile diseases. (*See* p. 438). The frequent absence of such a history has led some to think that the inflammation must have been intra-uterine. It is difficult to understand the production of inflammation of the genital mucous membrane *in utero;* and, so far as I know, we have no evidence of its existence. Notwithstanding these objections, the best explanation of the occurrence of hæmatosalpinx with retained menses is that the atresia of the genital canal has been due to inflammation, leading to destruction of epithelium and adhesion of opposed mucous surfaces; and that the same inflammation spread up to the uterus and along the Fallopian tubes, and led to closure of their abdominal ostia. Then, under the influence of the pelvic congestion accompanying menstruation, bleeding has taken place into the tubes (probably from disease of the tubal mucous membrane), and the blood is pent up in the closed tubes.

Diagnosis.—These cases are not difficult of diagnosis. The history of amenorrhœa and the recurring monthly pain suggest what the condition is. If the blood be retained in the

vagina the bulging membrane can scarcely be taken for anything else. In atresia high up, leading to distension of the uterus, we have: (1) the situation of the tumour, which is that of the uterus, together with the fact that the vagina is not patent; (2) the age of the patient, which is that at which uterine new growths are hardly ever found; (3) the fact that the tumour cannot be pushed up, as an ovarian tumour of similar size could be. These facts make the diagnosis of such a tumour usually easy.

Prognosis.—Retention of menses seldom ends in spontaneous cure, and if such cure take place it is imperfect. Rupture through the obstructing septum may happen, and this may correctly be called "natural cure." But it happens so seldom that it cannot at all be expected; and when it has taken place and the retained blood been discharged, the opening is likely to close again, and the trouble recur. Rupture has been known to take place into the rectum, and then germs of putrefaction get access to the retained fluid, decompose it, and set up inflammation, which may extend through the Fallopian tubes to the peritoneum. It has also taken place into the bladder, the cellular tissue, and through the perineum. In atresia high up rupture of a tube may also take place, with fatal peritonitis as a consequence.* Spontaneous cure is not to be hoped for.

Treatment.—The treatment of retention of menses consists in letting out the retained blood and if possible keeping open a passage through which the menstrual flow may escape in the future. The best way to do this is different in different cases.

1. **Retention from a transverse septum in the vagina.**—Anæsthetise the patient. This is advisable because, although this operation is disagreeable rather than painful, patients of the age and sex you are dealing with are difficult to control. Put her in the lithotomy position, and secure her in that position with Clover's crutch.

The safest way to cut through a septum in the vagina bulged down by blood under tension is with the Paquelin cautery knife. The high temperature of the knife kills any germs in

* For cases illustrating the dangers of hæmatosalpinx, see Fuld, "Arch. für Gyn.," Band xxxiv.

contact with it. If you have not got this apparatus, take a clean scalpel. For greater security immerse it for sixty seconds in a 1-1,000 sublimate solution. Sponge the face of the septum and adjoining parts well with the same solution. Then make a large incision through the septum in the middle line. Have ready some clean dry absorbent cotton-wool, and receive the fluid first in a bowl, then, as the flow gets less abundant, apply a thick pad of wool. Decomposition of the retained fluid is prevented, in the first instance, by the free outward current of the fluid, so that there is none retained to decompose, and then by the clean, dry wool, which filters off the germs which might enter from the surrounding air. The pads should be large enough, and be changed often enough for there to be always a layer of dry wool outside that which the discharge has soiled. There is no need to wash out the vagina with an antiseptic, if no germs get in. If the discharge should unfortunately come to stink, then the vagina can be washed out. Washing out is dangerous, because fluid forcibly pumped in may run along the tubes if they are dilated, and set up peritonitis. You cannot be sure the tubes are not dilated. The cardinal points in the operative treatment of retention of menses are (1) no squeezing and (2) prevention of septic infection.

2. **Hæmatometra.**—If the vagina is not pervious, the retained blood will distend the uterus, and may distend the Fallopian tubes. Distension of the uterus with blood is called hæmatometra (*see* Fig. 175, p. 604). It is important to find out, if possible, whether the tubes are dilated or not. If the uterus only is distended, you will feel it as a rounded swelling, from the anterior and upper parts of which you may trace the uterine appendages, which are not enlarged and feel like firm cords, at the outer ends of which you can palpate the ovaries. If this is the case, try to make a new vagina by dissecting between the urethra and vagina. By such an operation a canal sufficient for menstruation can be produced and maintained. It will probably become so narrowed at one part as to be unfit for complete sexual intercourse; and in the event of pregnancy occurring Cæsarian section will be required for delivery. At the time that this operation is done the patient can be sterilised, and thus further

pregnancies avoided. She may think this risk a price worth paying for a living child; and therefore it is right to give her the option of incurring it. A vagina defective at one place may sometimes be widened by transplanting a flap of skin in the way I shall describe when speaking of vesico-vaginal fistula.

Vaginal operation for hæmatometra.—Put a sound in the bladder, and have it held there by an assistant. This will be your guide as to the situation of the urethra and bladder, and ought to prevent your wounding these parts. Put your left forefinger in the rectum and grasp the perineum and recto-vaginal septum with your finger and thumb. Now with scissors or scalpel dissect upwards between the urethra and rectum. You will find the scissors best at first, then, as you get deeper, the scalpel. Cut from side to side. As you cut, with your thumb press back the recto-vaginal septum from the urethra, so as to hold open the new canal, and also to supplement the incisions by tearing. If no firm cicatricial tissue be present, you will need a sharp instrument only to get through the mucous membrane; the connective tissue can be torn open with the fingers. Sponge frequently while doing this with the sublimate lotion. In this way you will open up a new canal leading to the uterus. When you have got as high as the uterus you will feel it as a tense, bulging, convex swelling. Your next step is to cut into this. If you are in doubt as to where you should put your knife, put in the needle of an exhausting syringe. When you see the treacly fluid flowing into this, you will know that your needle is in the cavity. Take out the needle, and make with the scalpel a free incision from side to side. Let the fluid run out without pressure, until it runs so slowly that it is clear that nearly all has escaped. Then put a glass or vulcanite stem about two inches long into the newly made os uteri, lest its margins should unite by the first intention.

The special dangers which attend the letting out by the vagina of retained menstrual fluid in the uterus are those which result from unskilful operating, viz. wounds of the urethra or rectum.

3. **Hæmatometra with hæmatosalpinx.**—If the tumour is not a globular swelling, but a tripartite one, there being

a central swelling with smaller lobes on each side, it is probable that the tubes are distended as well as the uterus. If so, the dilated tubes are a source of danger. The uterine opening is so small that the blood in the tubes cannot freely flow away by the uterus and the vagina, even if these canals are patent, and we do not know that dilated tubes are able so to contract as to force out blood which is distending them. Hence we have no ground for expecting that emptying a hæmatometra by the vagina will be followed by similar emptying of a hæmatosalpinx. On the contrary, we know from experience that when the tubes are dilated the liberation of retained blood from the uterus is often followed by rupture of the tubes and escape of the blood, and possibly pus, into the peritoneum. Blood which has been long retained is no longer a living tissue: it is dead matter, and microbes, if they get access to it, feed upon it, multiply in it, and quickly set up fatal peritonitis. In such tubes, filled with dead blood, suppuration may have begun, although there has been no surgical interference.*

Rupture of a tube is likely to happen if the tubes are softened by inflammation, distended, and adherent to neighbouring parts. (*a*) The diminution of the tumour by the withdrawal of its contents makes the uterus sink lower in the pelvis, and thus pull the tubes down; if the tubes be adherent, rupture may be the result. (*b*) Escape of fluid from the tubes is favoured by the lowering of the intra-abdominal pressure which follows the withdrawal of a quantity of fluid. In these patients the abdominal walls are firm, and hence do not sink in when the contents of the belly are lessened. This lowers the pressure within, and may suck fluid out of the ends, or if the tube wall be soft (as it often is, from inflammation), rupture it. (*c*) It is thought also that the letting off the fluid, by diminishing the pressure within the uterus, stimulates the uterus to contract, that this contraction may drive fluid into the tubes, and so rupture them; and that the contraction may also extend along the tubes. These explanations of how rupture of the tube may come about are theoretical; we do not know what is the really effective condition. But we do know that

* See Martin, *Brit. Med. Journal*, Oct. 31, 1896.

when the retained fluid has distended the tubes, rupture of a tube is one of the dangers which attends the operation for the cure of atresia. When the fluid is retained in the vagina, and not in the uterus, and the tubes are not dilated, this danger is not present. Hence operations for retention of menses in the uterus are more dangerous than for retention by a septum low down in the vagina. We know also that the danger of rupture of a tube will be increased by kneading or pressing on the belly. This should, therefore, on no account be done.

Peritonitis is a danger which attends operation in these cases, even when the tubes are not dilated. This comes from microbes, which find in the retained blood a soil suitable for their growth. They multiply, and spread up the vagina and uterus, and along the tubes to the peritoneum, and then produce inflammation. Therefore, take throughout every care against the entry of micro-organisms. Peritonitis may come on as long as three weeks afterwards.

Even if the danger from dilated tubes were slight, they are probably functionally useless. Therefore, if there is ground for thinking that the tubes are dilated as well as the uterus, the best treatment is to open the abdomen, and remove the diseased uterus and tubes, without opening them. I shall describe how to do this in the chapter on hysterectomy for fibroids. But I know of no operator whose experience of these rare cases, treated by abdominal section, is as yet large enough to enable him to speak with authority as to the method of operating best suited to them.

Mere closure of the vagina by a septum when once opened gives no subsequent trouble. When the vagina is closed by cicatrices, menstrual retention can be relieved, but the new canal closes up to a small fistula, and attempts to keep it as a large canal fail.

Late atresia.—In the foregoing paragraphs I have spoken of atresia from congenital developmental defects, or disease in childhood. In such cases the effects of atresia are seen in their fullest degree, because they occur in patients whose youth and ignorance of such matters prevent the symptoms being noticed or investigated until the morbid changes have long gone on. Atresia may result from closure of the os uteri in a patient who has previously been regular. Cicatrisation

after any kind of ulceration, or after cauterisation; blocking of the cervical canal by a tumour, either a fibroid or a malignant growth, may effect this; but its most common cause at the present day is cicatrisation after amputation of the cervix uteri.

The consequences that we see from this kind of atresia seldom amount to more than distension of the uterus, because it has not been preceded by inflammation of the tubes. The atresia is preceded by stenosis, and the stenosis causes obstructive dysmenorrhœa. We get a history of menstruation getting more painful each month, and then stopping. The patient knows that something is wrong and applies for treatment early. When you see her the history at once puts you on the right track. You examine, and discover, instead of an os uteri with a healthy margin, a puckered scar, in which you find no opening. The uterus, instead of being of its natural flattened pear shape, is nearly spherical, because the sphere is the shape which contains the largest contents, and, therefore, the uterus under pressure from within takes as nearly this shape as its structure will allow.

The treatment of these cases is simple. Put in a duck-bill speculum. Fix the cervix with a hook or volsella. Put a sharp knife into the scar that represents the os, and incise it freely. When the fluid has ceased to run put in a glass or vulcanite stem, and let the patient keep in bed for three weeks.

CHAPTER XLVI.

AMENORRHŒA—MENSTRUATION ABSENT.

Suppose that you can press your fingers down deep into the pelvis. There is no need, so far as the patient's health is concerned, to examine further. If there be atresia, the menstrual retention cannot be of long duration, and the postponement of treatment will not do serious injury. If symptoms of menstrual retention should afterwards present themselves the examination can be completed then.

If the patient have passed the age at which menstruation ought to have begun (and remember that this age is not fixed, and that we know not why it comes on earlier in some women than in others), and there is neither retention of menses nor pregnancy, it is due to one of two causes. First, disease which stops menstruation after it has begun prevents it if it has not begun. These diseases have been enumerated. Second, the menstruating organ may be imperfectly developed. Before concluding that a healthy-looking girl who has never menstruated, therefore has an imperfectly developed uterus, do not forget that she may be pregnant. If you examine by the abdomen first you will not make this mistake.

Causes of absence of menstruation.—The patient may be well-grown, florid, muscular, fat, in perfect health, and yet not menstruate. In such cases amenorrhœa is due to imperfect development of the uterus or ovaries, or both. Imperfect development of the ovaries implies imperfect development of the uterus; but deficient development of the uterus does not imply defect of the ovaries. Such patients are perfectly well, and the only reason for examining them is to relieve the natural anxiety of the patient and her friends.

THE DEVELOPMENTAL DEFECTS WHICH MAY CAUSE AMENORRHŒA.

1. **The ovaries.** — **Absence** of the ovaries has been described by old writers, but the cases so described are regarded with little confidence by modern investigators. They are cases in which the ovaries were not identified. Deficiency of one ovary only is very rare, but a few cases have been recorded in which all the organs which should have been developed from what are called the "segmental masses" on one side have been absent. The uterus has been unicorned, the Fallopian tube and ovary have been absent or rudimentary, and the kidney on that side has been displaced downwards. (The supra-renal capsule, which is distinct from the kidney in its development, is normal.) There are also some cases in which with a well-developed uterus the ovary on one side has not been found, and the outer end of the Fallopian tube has been undiscoverable. Such cases are believed to be due to interference with the blood supply to the ovary through tension or compression by adhesive bands in early life. Complete absence of the ovaries produces amenorrhœa, but absence of one ovary, however brought about, is not enough to do so, nor does it entail sterility.

Imperfect development of the ovaries is seldom, if ever, on one side only. The ovary is like that of a fœtus, small, solid, with no follicles visible to the naked eye. The sexual functions are in abeyance. The uterus is imperfectly developed, menstruation absent, conception impossible.

Diagnosis.—The diagnosis of imperfect development of the ovaries is practically impossible. It is not enough to find out that the ovaries are small, because we do not know how small an ovary may be and yet be healthy. We must be sure that they are very small. Now, as they can only be felt through a considerable thickness of other tissues, it is difficult to be sure of this. The only way in which the ovaries can be felt well enough to justify the formation of such an opinion is by examining while the patient is under anæsthesia, with one hand on the abdominal wall and two fingers of the other in the rectum. The rectal

fingers should be of the hand corresponding to the ovary that is being sought for. To feel the right ovary, stand on the right of the patient, put two fingers of the right hand into the rectum, and the left hand on the abdomen. Get the uterus between the two hands, and from its upper angle feel the Fallopian tube and ligament of the ovary running like cords. The posterior cord will lead to the ovary. You may thus judge of its size. To get at the left ovary, put two fingers of the left hand into the rectum, and the right hand on the abdominal wall. It is possible to feel both ovaries with the fingers of either right or left hand in the rectum, but it is more easily done on the side to which the internal hand corresponds, and it is so difficult to judge of the size of the ovaries that you ought to take advantage of every aid.

2. **The uterus.**—Imperfect development of the uterus is more easily ascertained than the corresponding condition of the ovary. Development may be imperfect in several ways. Some defects prevent uterine function, others do not. It will be convenient to consider them together, although some do not produce amenorrhœa.

There are two classes of uterine malformations:—

a. Those due to defect in the growth of the uterus.

b. Those due to imperfect union of its lateral halves.

The order of development. — During the first eight weeks the ducts of Müller are still separate. At the end of the twelfth week the septum ought to have been absorbed. By the end of the twentieth week the horned shape of the uterus ought to have disappeared. The arbor vitæ is formed, but the vagina is still smooth. By birth the vagina ought to be in folds, and the uterus well rounded.

Uterine malformations have been divided according to the period of fœtal life at which they arise:—

A. Those occurring in the first half of pregnancy.

B. Those occurring in the second half of pregnancy.

(A). The deformities produced by influences acting in the first half of pregnancy are:—

i. Absence of uterus.

ii. Rudimentary uterus.

iii. Absence or deficiency of one half.

iv. Want of union of the lateral halves, which, according to its degree, may result in either (1) a completely double uterine cavity, the two halves being—(*a*) Quite separate—uterus didelphys. (*b*) To external appearance united, divided only above—uterus bicornis. (*c*) Of normal external appearance, but divided by a septum—uterus septus. Or (2) (*d*), an incompletely divided uterine cavity, the uterus being either horned (*a*), uterus bicornis or arcuatus, or not (*β*), uterus subseptus.

(B). Influences acting in the second half of pregnancy only produce the fœtal or infantile uterus.

(1) **Absence or** (2) **rudimentary condition of uterus.**—(1) The uterus may be absent, or its situation only indicated by some V-shaped bundles of muscular and connective tissue. Such extreme want of development as this is very rare, except in monsters, where it co-exists with other defects. Descriptions of cases in which the uterus is said to have been absent are common, but remember that when the uterus is very small and thin it is difficult to identify it by bimanual examination. It has been overlooked in *post-mortem* examination. It is sometimes difficult on *post-mortem* examination to distinguish a rudimentary uterus from a tube or ovary. The round ligament is the guide: it marks the outer end of uterine structure.

With an imperfectly developed uterus ovaries may be present or not. If present, they may be well developed and produce ova. Fallopian tubes may or may not be present. When present, their lumen at the uterine end is usually obliterated, but at the outer end they are patent, and the fimbriæ are well formed. If uterus, tubes, and ovaries are absent the broad ligaments do not exist: the peritoneum passes from bladder on to rectum as in the male. In all cases of absent or rudimentary uterus the vagina is either absent or ends in a *cul-de-sac*. The external genitals may or may not be normal. The breasts and pubic hair may be well developed—the former may secrete milk. The body may be well grown and present all the feminine characters. Menstruation is, of course, absent. It does not follow, because vagina and vulva are badly developed, that therefore the uterus is so.

Mayrhofer* quotes cases in which, with absence of the vagina, but with an opening from the rectum into the uterus, patients became pregnant. In one of these pubic hair was absent. Some cases reported as women with absent uteri have really been male pseudo-hermaphrodites.

(2) The next degree of development is that in which the uterus is only represented by a fibrous nodule without a cavity, from which run outwards fibrous cords. These cords may be partly uterine horns, partly Fallopian tubes. The boundary between the two is marked by the round ligament. Another form of rudimentary uterus is that in which there is a flat muscular band running transversely across the pelvis and ending in round ligaments on each side, the cervix uteri being quite absent.

The most common form of rudimentary uterus is the *uterus bipartitus*. This is a rudimentary body of uterus formed of fibro-muscular tissue, ending below in a blind vaginal *cul-de-sac*, into the top of which the fibro-muscular bundles are inserted. Above it ends on each side in a fibro-muscular band, which is sometimes swollen at the insertion of the round ligaments and sometimes contains a small cavity; or the neck may contain a cavity while the rudiments of the body do not. The vagina is usually short or deficient.

(3) **Malformations in which one-half the uterus only is developed—uterus unicornis.**—This is long in proportion to its breadth, cylindrical, lying obliquely in the pelvis, the body being towards that side to which the developed half belongs. Fallopian tube, ligament of ovary, and round ligament spring from the developed half. The body of the uterus is smaller than that of a properly developed uterus, so that the neck is longer and thicker than the body. The wall becomes thinner as the Fallopian tube is approached. On the opposite side the half uterus is either absent or undeveloped. If entirely absent, then tube, ovary, and round ligament are absent. If imperfectly developed, these parts are undeveloped. (Fig. 179.) These appendages have been found apparently unconnected with the uterus, lying in the lumbar region. The undeveloped half uterus

* Billroth and Lücke, "Deutsche Chirurgie."

Fig. 179.—Diagram illustrating uterus bicornis with imperfect development of one half. (*Giles.*)

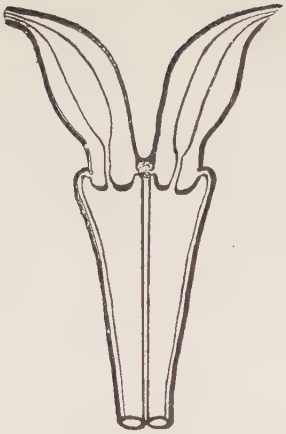


Fig. 180.—Diagram illustrating uterus didelphys. (*Giles.*)

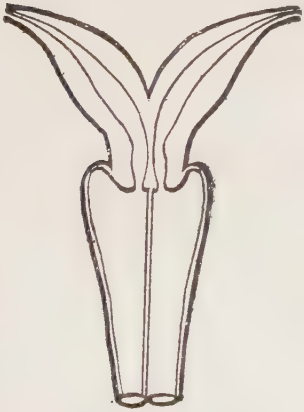


Fig. 181.—Diagram illustrating uterus bicornis duplex. (*Giles.*)

Fig. 182.—Diagram illustrating uterus bicornis semiduplex. (*Giles.*)

Fig. 184.—Diagram illustrating uterus subseptus. (*Giles.*)

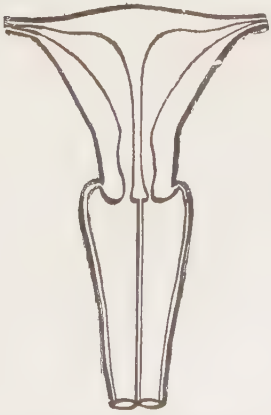


Fig. 183.—Diagram illustrating uterus bilocularis or septus. (*Giles.*)

forms either a small, round, solid body, or a fibro-muscular band, either thin, or a flattened cylinder in shape. It may contain a cavity communicating either with the Fallopian tube, but not with the developed half of the uterus, or with neither, or with both. There is generally no other malformation.

This condition interferes neither with menstruation nor with pregnancy. Its diagnosis is difficult. When pregnancy does not exist the deformity may be suspected from the obliquity and slenderness of the uterus. Pregnancy in a unicorned uterus cannot be diagnosed from pregnancy in a normal uterus; nor pregnancy in a rudimentary horn from tubal pregnancy.

Uterus didelphys. (Fig. 180.)—In this form both uteri are entirely separate, sometimes viscera lying between them. This is always combined with other malformations. The two uteri are often imperfectly and unequally developed. Sometimes there is no vagina: or the vagina may be imperforate or open in a cloaca: or there are two vaginæ, which may be separate from one another and from the uterus. According to Kussmaul, this rare malformation is only met with in still-born or short-lived children, because the other deformities soon lead to death. Therefore it has little practical importance.

Uterus bicornis duplex. (Figs. 180, 181.)—There are two chief forms, according to whether the two uteri are united only at and below the internal os, or whether the union extends above it. Below the point of junction the division between the two uteri is either not indicated at all or marked only by a vertical furrow on the anterior surface.

Uteris bicornis semiduplex (Fig. 182) is when the two horns join at the os internum, and below the point of junction there is either no division at all or a division not reaching as far as the os externum. The horns may be unequally developed, and there is every degree of imperfect development between a uterus unicornis and a uterus bicornis with the two horns equal.

Uterus arcuatus is the slightest degree of all. In it there is merely a vertical depression in the middle of the fundus uteri. According to Credé and some other observers,

who think that in expressing the placenta they often feel this central depression, this malformation, in a slight degree, is common. But on *post-mortem* examination it is not found so frequently as it should be if these clinical observations are correctly interpreted.

With uterus bicornis of any kind the vagina may be single or double, and, if double, the septum may extend all the way or only part of the way.

Uterus septus, or bilocularis, is a uterus that externally shows no sign of division, but is internally divided by a septum into halves. (Fig. 183.) **Uterus subseptus** is when this septum is incomplete: it may be present in the cervix only, or start from the fundus and not reach all the way. (Fig. 184.) Uterus septus is less common than uterus bicornis. There is generally some groove or extra breadth to indicate the malformation. The vagina may be single, double, or partly divided.

Menstruation in a double uterus is as perfect as in a normal uterus. In a completely double uterus, sometimes only one uterus bleeds, sometimes both.

Malformations determined in later fœtal life, or in childhood—Uterus fœtalis, or infantilis.—This is the commonest developmental defect. The uterus of a grown woman resembles in size, shape, thickness of walls, and the relation between the length of the cervix and that of the body, that of a fœtus of six months intra-uterine age, or that of a child under fourteen. The body is small in proportion to the cervix: it may be no bigger than a pea. The wall of the body is no thicker than that of the cervix, and may be thinner. The vagina may be the usual length and width, but it is sometimes shorter and narrower. The breasts are sometimes small. Sometimes patients are full-grown, sometimes cretinoid. In some cases the uterus is longer, and may be of normal length, but the wall of the body is thin. Sometimes there is no cavity of the body. In another form, the whole uterus is in all its parts proportionately small. Virchow has called this "*primary atrophy.*" Yet another form is called **uterus parvicollis or acollis,** in which the vaginal portion is small, although the body is normal.

Treatment.—On inquiry you will find that patients who

do not menstruate because the menstruating organ is defective come for treatment, not because they feel ill, but because they think that the non-appearance of menstruation indicates something wrong. If this is the sole reason why advice is sought, explain that the womb has not grown to its full size, and that this is why the patient does not menstruate: that it is not necessary that she should menstruate, and that, therefore, she had better be content with her condition. If she be only a year or two past the age at which menstruation usually comes on, and the uterus is merely small, it may yet develop.

Two things may give an adventitious importance to amenorrhœa from defective development: (1) the occurrence of menstrual molimina, or of so-called vicarious menstruation; (2) the patient may wish to marry.

Menstrual molimina.—This term denotes the symptoms which accompany menstruation, and which, when they make the patient suffer so much as to go to a doctor, are called dysmenorrhœa. In Chapter XLIII. I have given reasons for thinking that ovulation may produce monthly recurring pain; and ovulation may take place when the uterus is absent or badly developed. The patient may think, and doctors have thought, that this pain is because the menstrual blood does not flow. Were this theory correct, the production of menstruation should be the aim of treatment.

Emmenagogue treatment.—I advise against any attempt to make an imperfectly developed uterus menstruate, for the following reasons. First, it is certain that amenorrhœa does no harm. This is shown by cases of women who do not menstruate because the uterus is absent or small, and yet remain perfectly well without the smallest discomfort to remind them of the missing function. Second, there is no medical treatment that will produce menstruation. Some drugs are called "emmenagogues," but there is no drug which will make menstruation appear, excepting such as cure disease that prevents a well-grown uterus from menstruating. Attempts have been made to stimulate the uterus either by putting a stem pessary inside it, or by electricity. It is possible by such treatment to make a uterus bleed, but such bleeding is not menstruation, it does no good, and ceases when the irritant is withdrawn.

Cases have been published in which writers have said that they have by electricity made the uterus menstruate; but such reports only affect my judgment if they bear internal evidence that the narrator took pains to distinguish between the bleeding of an irritated uterus and menstruation; and also between the effect of electricity and that of other concomitant influences. I have read no cases so reported as to show that these fallacies have been kept in mind. The only real stimulant which will occasionally make a backward uterus develop, is marriage, or, to speak accurately, sexual excitement.

Vicarious menstruation.—This term means that when the uterus does not menstruate, a flow of blood from some other part replaces that which ought to have come from the uterus. No such thing has yet been accurately observed or described. Cases recorded as examples of it fall into three groups: (1) Cases in which the only evidence is a vague statement from a patient unaccompanied by dates. Every case in which a patient making such a statement has been asked to keep a diary has failed to show any coincidence between the supposed vicarious hæmorrhages and the menstrual period. (2) Cases in which patients lose blood from some diseased part—the lungs or stomach, for instance—and in consequence become anæmic and do not menstruate, and think the bleeding is the consequence of the amenorrhœa instead of its cause. (3) Cases in which, as in purpura, the general vascular tension which precedes menstruation causes hæmorrhage from other parts besides the uterus; that is, menstruation is accompanied by hæmorrhage from other parts, not replaced by it.

Amenorrhœa and marriage.—When an otherwise healthy young woman of nubile age has never menstruated, she ought not to be married without medical advice; for the defective development which such amenorrhœa indicates may be of such degree as to unfit the patient for marriage. Give no opinion in such cases without local examination. You may find that there is a vagina, but that the uterus is small. In such a case state that the patient is fit to be married, but that it is unlikely that she will ever have children. It is possible, though unlikely, that

marriage may make the uterus develop. It is possible for a woman with an imperfectly developed uterus to become pregnant. Matthews Duncan says that when this has happened the uterus goes back to its former small dimensions after delivery. This I have verified. If you find the vagina absent and the uterus rudimentary, explain that the patient cannot have children, nor can she have natural sexual intercourse. It is possible in such cases, by dissecting between the urethra and rectum, to make a deep mucous pouch which will serve as a vagina. Although this may properly be done for a woman already married, yet you cannot assert that by this operation you can make the woman capable of normally fulfilling the duty of a wife. The proper course, if consulted before marriage, is to say that the woman is not fit for sexual intercourse, but that it can be made possible, though imperfect. Never forbid marriage. Your duty is to explain to the persons who ask your advice as to marriage, the physical consequences of such marriage: and there it ends. If the persons concerned choose to accept those consequences —as they sometimes do—that is their business.

There are developmental defects which make the patient's sex doubtful, and this will be the most convenient place in which briefly to describe them. The subjects of such malformations are often called hermaphrodites.

Hermaphroditism.—In its literal sense the word hermaphrodite means an individual who possesses perfect male and female sexual organs. No such thing exists in the human species. The genital organs, looked at from this point of view, consist of two parts: the genital gland itself (ovary or testicle), which is the essential organ; and its excretory duct (Fallopian tube, uterus, and vagina; or vas deferens and urethra). The genital gland is developed out of a mass of cells, which at first has no definite character, but which later becomes either an ovary or a testicle. It must be one or the other. We can hardly conceive its becoming both; nor have we evidence of its doing so. The excretory duct is developed, according to the sex, out of the Müllerian or Wolffian duct. Both of these ducts are present early in fœtal life, and one develops and the other atrophies. Now it is easy to understand that the development of the one or the

atrophy of the other may be interfered with, and thus the excretory ducts may be imperfectly formed, so that the sexual characters are not distinct. Cases in which, although the nature of the genital gland is not doubtful, yet the external parts have some features common to both sexes, are called pseudo-hermaphrodites.

True hermaphrodites.—I have said above that we have no evidence of the genital gland being double. But cases have been described in which this has been thought to be the case. They have been divided into three classes: (1) *Bilateral hermaphrodites,* in which it has been thought that both an ovary and testicle have been present on each side of the body. Blacker and Lawrence * have collected nine cases reported to be such, and find reason for rejecting all but one. Ballantyne † regards as not proved the case which Blacker and Lawrence accept. (2) *Unilateral hermaphrodites,* in which it has been thought that on one side there were both an ovary and a testicle. Only two such cases are on record, and Blacker and Lawrence see reason for doubting them both. (3) *Lateral hermaphroditism,* in which it has been thought that an ovary was present on one side and a testicle on the other. Blacker and Lawrence have described one, and collected seventeen others; but they find proof defective in all but two. In these two the sexual glands, supposed to be of different nature on the two sides, were not properly developed on either side. Blacker and Lawrence's own case was that of a fœtus, and the genital glands were imperfectly developed. The diagnosis in all these cases rests upon the microscopic differences between imperfectly developed testes and imperfectly developed ovaries. This diagnosis is extremely difficult. It may be said, without fear of cavil, that well-developed glands of both sexes do not occur in the same individual.

Pseudo-hermaphroditism.—This means that although the genital glands are of one sex only, yet that the excretory ducts of both sexes are present, wholly or in part. Hence the subject appears to possess the organs of both sexes, although this is really not the case. The subjects of these

* "Obst. Trans.," vol. xxxviii.

† Allbutt and Playfair's "System of Gynæcology."

malformations may be either male or female. The malformations vary in degree, and so each kind of pseudo-hermaphroditism (male and female) has been divided into internal, complete, and external.

The commonest is the male external pseudo-hermaphrodite. The subject of this has testicles, though they may be undescended. The scrotum is so deeply furrowed in the middle line as to look like labia, and the penis is hypospadiac —that is, the urethra opens on its under surface, near its root. The penis is often small and the breasts are large. Hence it is easy to understand how doubt as to sex may arise. In the internal form of male pseudo-hermaphroditism the external genitals are masculine in general conformation, but the subject possesses a uterus and vagina. In the complete form there is a uterus and vagina with external genitals looking like those of a female.

The commonest form of female pseudo-hermaphroditism is that produced by the combination of adhesion of the labia, large size of the clitoris, and labial ovarian herniæ. Pseudo-hermaphrodites are generally sterile, for the organs which resemble those of the opposite sex are generally badly developed.

What advice to give.—The diagnosis of sex in some of these cases is difficult even when the subject is dead and can be dissected: much more so during life. If consulted in a case in which you cannot decide, remember two things: first, that these malformations are much commoner in males than in females; secondly, that after-trouble is less likely to arise from a female being brought up as a male than from a male being brought up as a female. Therefore, if you are in doubt as to the sex of an infant, and are pressed for an opinion, advise that it be brought up as a boy.

Part IX.

DISORDERS OF THE SEXUAL FUNCTIONS.

CHAPTER XLVII.

SEXUAL TROUBLES.

Dyspareunia signifies difficulty or pain in sexual intercourse. Coition may be difficult but not painful, or painful but not difficult, or both difficult and painful. Consider first—

Difficulty without pain.—You are told that intercourse cannot be accomplished. On inquiry you find that attempts at its performance do not much hurt the patient. Such a report points either to a malformation, so that the vagina is closed or absent, though not tender, or, which is commoner, to defective power in the male. The diagnosis of the former condition is only to be made by examination of the vulva and vagina. These developmental defects have been described in Chapter XLVI. Smallness of the vagina I shall afterwards speak of. If there is no malformation or contraction of the vagina, the cause of the difficulty is not in the female. The consideration of impotence in the male is beyond the scope of this work.

Pain without difficulty.—This is present with most pelvic inflammations, with prolapse and tenderness of the ovary, in some cases of retroflexion, in chronic metritis. In these diseases there is neither contraction nor tenderness of the vulva, and therefore there is no difficulty; but when penetration is complete a tender part is pressed on, and pain is caused. The cause of the tenderness can only be found out by examination. The diagnosis and treatment of the local conditions

I have named are described in other chapters of this work. If the vaginal wall is not fixed, the pain can often be relieved by the introduction of a soft ring pessary, which will protect the tender part from contact. If the vaginal wall is fixed, the tension caused by the pessary cannot be borne. In acute retroflexion, which is sometimes a cause of great dyspareunia even in nulliparæ, if a pessary fail to relieve, the patient can be cured by ventral fixation of the uterus. (*See* Chapter XI.)

Pain and difficulty.—In most cases of dyspareunia there are both pain and difficulty. Such cases fall into three groups: 1. Smallness of the vaginal orifice. 2. Vaginismus. 3. Disease of the vulva.

1. **Smallness of the vaginal orifice.**—In most virgins (not in all) the vaginal orifice is so small that the first intercourse is difficult, painful, and causes bleeding. If the vaginal orifice is smaller than usual, this difficulty may not be surmounted, and each attempt will cause pain, especially if the patient be nervous, so that she cannot constrain herself to submit. Advice is not usually sought till months or years after marriage, and then the history is that the trouble dates from the marriage day. When you examine, you find that beyond the smallness of the vaginal orifice there is no sign of disease, and that the mucous membrane can be touched anywhere without causing pain. The treatment of such cases is to enlarge the vaginal orifice.

Methods of enlarging the vaginal orifice.—(A) **By gradual dilatation.**—This may be done if the patient objects to anæsthesia. Pass Hegar's dilators from the smaller sizes to the largest. The objections to this treatment are (*a*) that the set of Hegar's dilators commonly sold does not contain instruments large enough to dilate the vagina sufficiently; so that dilators of special size must be made, or failing this, dilatation completed with successive sizes of Fergusson's speculum: (*b*) that this mode of dilatation is slow and disagreeable. For these two reasons it is not the best and is seldom used, though special reasons (the chief being some objection to an anæsthetic) may indicate it.

(B) **Rapid dilatation.**—Anæsthetise the patient and put her in the lithotomy position. Put your fingers and thumb together into the form of a cone. Anoint them with glycerine

of corrosive sublimate 1 in 2000. Gradually press them into the vagina, until the metacarpo-phalangeal joints of the fingers can pass the vaginal orifice. This operation will tear the hymen, the vaginal orifice and the vagina. The objection to it is, that there is no precision in the extent or direction of the vaginal tearing. If too little, the tears may heal, and the vaginal orifice be not much enlarged. The fourchette may alone be torn, and the vaginal orifice merely pushed up; in which case no benefit will result, for it is the firm vaginal orifice which is the obstacle. If too extensive, the muscular and fascial structures supporting the vagina may be torn as they are in labour and a tendency to prolapse result. I have known troublesome bearing-down pain last some weeks after this operation.

(C) **By cutting.**—By this method the vaginal orifice is enlarged with precision and certainty; and no other part is injured. The patient being anæsthetised and in the lithotomy position, cut with a scalpel on each side downwards and outwards through the vaginal orifice. When the sides of the cut are pulled apart, the raw surface becomes rhomboidal. Unite with catgut stitches the upper sides of the rhomboid to the lower. In this way you will remove the obstacle with certainty, and do no damage to the pelvic floor.

VAGINISMUS.

2. **Vaginismus** is a nervous disease marked by two features (*a*) extreme sensitiveness of the mucous membrane of the vulva, and (*b*) spasmodic contraction of the levator ani muscle. In consequence, when sexual intercourse is attempted, and the mucous membrane of the vulva is touched, (*a*) intolerable pain is produced, and (*b*) the levator ani contracts so as practically to close the vagina. The name "vaginismus" was given to the disease by Marion Sims: as laryngismus means spasmodic closure of the larynx, so vaginismus means spasmodic closure of the vagina. The sensitiveness is more than mere shrinking from timidity: for the patient may be most desirous that marriage should be consummated, and yet unable to endure attempts at it.

Associated conditions.—Vaginismus is often associated with painful menstruation, and often the rectum is over-

sensitive, as well as the vagina, so that the patient cannot bear the administration of an enema. The spasmodic contraction of the levator ani is painful. Probably other muscles in the pelvic floor contract also; but they are comparatively insignificant. With vaginismus there is generally absence of sexual desire, so that the act is not only painful but repugnant to the patient. But this is not invariably the case: Matthews Duncan mentions a case in which the painful muscular spasm was felt by the patient in an erotic dream. I have seen a case in which with vaginismus there was strong sexual desire.

Clinical course.—Vaginismus is not found out till the patient is married. It is a rare disease, and it is not practicable to follow its course like that of diseases about which patients do not mind speaking. The following statements I think are in accordance with fact: (1) The usual result of vaginismus is that marriage is not consummated, and sterility and conjugal unhappiness are the result. The disease has no regular tendency to spontaneous cure. (2) In some cases in which it is associated with dysmenorrhœa, dilatation of the cervix will cause menstrual pain to cease, sexual desire to develop, and vaginismus to disappear. (3) Although vaginismus usually causes sterility, it does not always do so; for if spermatozoa reach the lower part of the vagina, their power of locomotion enables them to make their way up to the uterus. If pregnancy take place and go to term, the patient is not cured by childbirth. With lapse of years the patient gets less sensitive to pain of all kinds, and therefore the pain of vaginismus gets a little more bearable. (4) Matthews Duncan states that it is liable to "spontaneous" variations (that is, to variations the cause of which we do not know) and may even disappear. (5) I have seen two cases in which vaginismus developed suddenly in patients who had been married for years without either impediment or pain in intercourse. In one case the patient could tell of no cause; in the other, mental shock produced stoppage of menstruation, and at the same time intercourse became painful, and the passage seemed blocked. I could find no local disease to account for it. I did not have the opportunity of treating the patients long or of knowing their after-history. (6) Pierre Marie* describes

* "Diseases of Spinal Cord," N.S.S. Trans., p. 290.

"vulvo-vaginal crises," which evidently consist in painful spasms of the levator ani, as being an early symptom, sometimes a pre-ataxic one, of tabes dorsalis.

Diagnosis.—Vaginismus has to be distinguished from (1) mere smallness of the vagina in a nervous patient. The latter condition differs from vaginismus in that the parts can be touched without causing pain, and if the finger is gently inserted into the vagina there is neither pain nor spasm of the levator ani. In vaginismus even touching the mucous membrane provokes signs of pain and spasm. (2) Vaginismus has also to be distinguished from local diseases producing spots of tenderness, diseases which Matthews Duncan grouped under the common term of "secondary vaginismus." Such disease will be discovered by inspection of the part.

Treatment.—Vaginismus is in some cases incurable. Neither by stretching, nor by cutting, nor by childbearing can a case of the worst kind be cured. Intercourse may be made possible by the insertion into the vagina, five or ten minutes beforehand, of a pessary containing .2 gr. of eucaine β in ʒij. of glycerine mass. But there is much difficulty in diagnosis between the sensitiveness of a timid patient and genuine vaginismus. Vaginismus is rare, and in my experience most cases that seemed to be vaginismus have proved of the former kind, and have been cured by enlarging the vaginal orifice by the operation described on page 629. If there be dysmenorrhœa, dilate the cervical canal at the same time, and enlarge the external os by division of the vaginal portion. Marion Sims recommended dissecting off the hymen. In bad cases this is useless. I know not that it helps the cure of slight ones. But it cannot do much harm. Enlargement of the vaginal orifice by cutting cures most cases.

3. **Disease of the vulva.**—The conditions of the vulva which often attract attention by the dyspareunia which they cause, are urethral caruncle, congestion and inflammation of the urethra, kraurosis of the vulva, chancres, painful vaginitis, fissures about the fourchette, follicular vulvitis. In these cases the symptom has generally come on after a long period of normal married life; but it may be

dated from the time of marriage. The diagnosis is made by examination. The clinical history, distinctive features, and treatment of some of these diseases are described in other chapters.

KRAUROSIS VULVÆ

Kraurosis vulvæ (*κραυρόω*, I make dry, harden).—This is a rare disease, attended with tenderness of the vulva and contraction of the vaginal orifice, and therefore with dyspareunia. This name was given to the disease by Breisky in 1885. It has been applied by different writers to cases not in every way alike; and we know not yet whether the differences between the different cases described under the name are essential, or minor and unimportant.

I have not read the original paper of Breisky, as it appeared in a journal inaccessible in London; but I take its contents from abstracts by others.* Breisky's cases occurred in pregnant women. The condition present was atrophic shrinking of the skin and mucous membrane of the external genitals, leading to obliteration of normal folds. The parts were dry, hard, white and glistening, and extremely tender. They had lost elasticity, so that the introduction even of a finger caused fissuring. The microscope showed atrophy of papillæ in the upper layer of the corium. The papillæ were low, the glands were gone, the rete mucosum was thin, so that the horny epithelium lay on the papillæ, and there was small celled infiltration in the deeper layer of the corium.

Vascular degeneration of vulva. — There is another condition which was pointed out to me by Sir J. Williams in 1876,† and was first described by Mr. Lawson Tait in 1877. This usually affects women towards the end of the child-bearing period. Dyspareunia is the first symptom. There are spots of discolouration, from a pale brick red or brown to deep purple, which when touched are very tender. They are on the inner surface of the nymphæ, just outside the vaginal orifice. According to Mr. Tait, "If a case be watched for a long time it will be found that the spots are

* *See* Martin, Volkmann's "Sammlung," No. 102, 1894; and Orthmann, "Zeit. für Geb. und Gyn.," Bd. xix.

† On mentioning it at that time to my late colleague, Dr. Palfrey, I found that he also was familiar with it.

transitory and spreading; that after lasting for some months, the red colouring either entirely disappears from the spot observed and comes out at another, or extends serpiginously, disappearing from the old site as it progresses towards the new. This process is very slow, but it explains the intractable nature of the disease, which is seldom content until it has passed over the whole mucous surface of the nymphæ. During its progress the vestibule of the vagina slowly contracts, until it may be so reduced as barely to admit a finger."* I have observed change in the shape and size of the red spots, but not such extensive change as that described by Tait.

It is clear that if Tait's description be correct the disease he describes is an early stage of the condition described by Breisky under the name of "*kraurosis.*" German writers deny this. In the cases described by Breisky there was no red or purple discolouration, and, according to German writers, in similar cases the shrinking of the tissues is the first change. But in two cases described by Orthmann† red discolouration was present.

I have seen red or purple tender spots on the nymphæ, causing dyspareunia, in young women who got well, the spots disappearing and the vulva ceasing to be tender. I have also seen red and purple patches exactly like those which Tait describes, but without the slightest tenderness. From such experience I conclude that although the "vascular degeneration," as Mr. Tait calls the red patches, may be present along with kraurosis, yet the two conditions: (*a*) the tender red spots, and (*b*) the contraction and hardening of the vulva, are essentially different, though they may sometimes co-exist.

Symptoms. — The chief symptom of kraurosis vulvæ has been styled—correctly as to most cases—"*climacteric dyspareunia.*" When a woman complains that, although she is otherwise in good health, sexual intercourse has become painful and difficult, this is probably the disease present. Dyspareunia may be the only symptom, but kraurosis is often accompanied with leucorrhœa, and generally with burning pain, smarting, and itching of the parts,

* "Diseases of Women," p. 44.

† "Zeit. für Geb. and Gyn." Bd xix.

which trouble the patient even though she be not living as a married woman. The same symptom may be the leading one in urethral caruncle, but here inquiry will reveal pain in micturition.

Etiology and prognosis.—It occurs chiefly in elderly women, alike in the sterile, the parous, and in widows, but I have seen it in women under thirty. Although the smarting and itching can be removed, and the patient made comfortable so long as she avoids sexual intercourse, yet there is no medical treatment that will undo the contraction of the vaginal orifice. In young women the painful red spots may get well or be cured without either tenderness or contraction remaining. I have seen atrophy of the vulva with contraction of the vaginal orifice, but without painful red spots, follow oöphorectomy for fibroids. I have seen also both atrophy and painful red spots follow double oöphorectomy for cystic disease in a young woman. Kraurosis vulvæ has been ascribed to syphilis and to gonorrhœa. These diseases are common, and kraurosis is rare. In the cases I have seen there was no reason for connecting the disease with either of these antecedents.

Pathological relationships.—German writers have suggested an analogy between kraurosis vulvæ and the white patches sometimes seen on the tongue in tertiary syphilis. I think the pathological resemblance incomplete, for there is no evidence that kraurosis vulvæ is syphilitic. If a pathological alliance be wanted for it, we might call kraurosis a local scleroderma, limited to the vulva. As we know nothing of the causes of scleroderma, this nomenclature would convey no instruction. Kraurosis vulvæ is not allied to the local form of scleroderma (morphœa, or Addison's keloid), for it is symmetrical. I think it allied to Dupuytren's contraction of the palmar fascia. Mr. Charters Symonds has met with shrinking of the prepuce in an elderly man so marked as to need circumcision.*

Treatment.—By sedative and astringent applications the patient can be put in comfort so long as sexual intercourse is not attempted. If there be vaginitis, order a douche. If the part be sore, a saturated solution of boric acid or

* "Hunterian Society's Transactions," 1895–96, p. 121.

borax will be best. This will often change a purulent discharge into a mucoid one. When this has been done, prescribe a weak astringent instead of the borax; either zinc chloride, 5 grs. to the pint, or liq. plumbi acet. half an ounce to the pint. The best way of treating the vulva is by applying remedies in powder. Tell the patient, after using the douche, to hold the labia apart, and with an insufflator puff on the powder so as to dust the whole surface. The powders which I have found most useful are iodoform, boric acid, and dermatol (a gallate of bismuth sold under this name). In young subjects I have found iodoform useful, but in others it produces smarting. The douche should be used twice a day, and the powder as often as the disagreeable sensations which it relieves arise. I have seen this condition treated by the application of strong caustics, and the effect was to make the patient worse.

As the disease is usually in the elderly, the patients are often satisfied if they can be put in comfort, although intercourse be not endurable. When contraction and hardening of the vulva is the morbid change, and it is important that married life should be possible, an operation should be done like that described at p. 628, for enlarging the vaginal orifice. I have found this successful. Martin,* of Berlin, recommends excision of the tender red spots when such are present. According to him this is curative, and relapse does not take place. I have treated cases by excision, in the manner recommended by Martin, with complete success so long as my observation of the patient has been continued.

ANOMALIES OF SEXUAL FEELING.

The female part of the reproductive process is more complex than that of the male, and the function forms a larger part of the life of a woman than of that of a man. Hence anomalies of sexual feeling are probably commoner in women than in men. The reserve which properly attends this subject prevents scientific investigation of it. I can only make certain statements based on a few cases in which the

* Volkmann's "Sammlung," No. 102, iv. series.

matter has been mentioned either to me or to medical men with whom I have been associated.

Absence of sexual feeling.—It is certain that complete absence of sexual desire and enjoyment may exist in a woman who is in perfect health, in whose sexual organs no fault can be found, and in whom intercourse is painless and without difficulty. Such lack of sexual feeling does not prevent fertility. It is quite compatible with keen enjoyment of the society of, and great power of attracting and dominating, the opposite sex. An instance of this is the case of Madame de Pompadour, who was for twenty years the mistress of Louis XV., although she was quite devoid of sexual feeling.* In some hysterical women the vagina is anæsthetic. The importance of lack of sexual feeling depends upon the views of those concerned as to the relative importance of the different purposes for which marriage exists. It is probably present in many happy mothers of families who never mention it to anyone. On the other hand, I have known it produce conjugal unhappiness ending in separation. Such disease (if it can be called such) is not in the sexual organs but in the nervous centre. Sexual feeling may continue to be absent throughout life, or it may suddenly develop late in the child-bearing years. In most healthily brought-up women it is dormant until marriage, and gradually develops after marriage.

Removable causes.—Some conditions which prevent sexual feeling can be removed. Any local disease which makes intercourse painful will probably also prevent desire and enjoyment, which may be restored when the disease is cured. The most marked example of this is spasmodic dysmenorrhœa, of which I have spoken at p. 550. I have known change in this respect brought about by vaginal fixation of a retroflexed uterus. Lack of sexual feeling in the female may be the result of physical defect in the husband such as prevents proper intercourse. Lastly, the human species differs from the lower animals in that in the latter the sexual function is purely physical, one healthy male being as good as another; while in the human female it is bound up with the higher emotions, so that what may be mentioned as a physical defect may be really due to an emotional cause.

* *See* "Mémoires de Madame d'Hausset."

Sexual feeling in excess.—In some women the sexual nervous centre is unusually irritable. This is manifested by (*a*) erotic dreams, and (*b*) the production of sexual orgasm by causes which ought not to have this effect. Such irritability may be a trouble to the patient, and therefore deserves the term "excess." (*a*) When women whose sexual feeling is strong suddenly discontinue marital intercourse, as from widowhood or separation, the tension of the sexual centre finds natural relief in erotic dreams accompanied by orgasm. Such dreams may also occur in young women who have not been married, are chaste in mind and body, and even ignorant of what sexual relations are. Madame Roland * has left a full description of her experience of them when she was fifteen, a virgin, and ignorant. Modesty generally prevents women from mentioning these feelings. There is no need to inquire about them, because no treatment that it is proper to use will affect them. Doubtless they can be abolished for a time by stupefying the patient with bromides or opium; but such treatment to get rid of what is natural would be absurd. If consulted about such things, remove any fears the patient may have by telling her that such feelings are natural, and will do her no harm. (*b*) There are women in whom the friction caused by working a pedal sewing machine or riding a bicycle will provoke the sexual orgasm. In such women probably other slight causes would do the same, and orgasm so easily provoked probably occurs frequently. Dr. Langdon Down called attention to this, and the ill-effects following it.† In my experience it is common for women to say that working the pedal sewing machine does not suit their health, although few explain this to be the reason, and it may not be the reason in every case. Increased reflex irritability and increased emotional excitability are effects of anæmia and of nervous exhaustion from any cause. When complaint is made of trouble of the kind under consideration, the treatment consists in (1) avoidance of the cause which provokes sexual feeling; (2) the treatment of anæmia and nervous exhaustion when present by hæmatinics (iron, arsenic), the procuring of sleep (alcohol, bromides),

* "Mémoires."

† *Brit. Med. Journal*, Jan. 12, 1867.

frequent and liberal meals, outdoor life; (3) occupation, and change of air and scene if practicable.

Sexual symptoms of nervous disease.—Increased sexual irritability may be the result of disease of the nervous centres. Pierre Marie* says that the occurrence of "clitoridean crises," *i.e.* sexual orgasm, often several times a day, is sometimes an early symptom of tabes dorsalis, and that it may occur in the pre-ataxic stage. I have known unsolicited garrulity about sexual sensations to be the first symptom of insanity. Remember this when consulted about such things.

SEXUAL ABUSES.

Masturbation in the female.—In some works on diseases of women, masturbation is said to be a frequent cause of disease in females. I have inquired of the head of a large institution for the training of girls as to the prevalence and effects of this habit. I believe that the following statements are in accordance with fact. Masturbation is not common in female children of average health and intelligence. Not more than one or two per cent. at the outside are addicted to it. It is not, as might be thought, limited to the years just preceding puberty, but occurs quite as often in children of three and four. The first noticeable effects of the practice are bad temper and stubbornness. Then the child becomes shy, seeks solitude, often spends a long time in the water-closet, has a downcast and drawn look about the eyes, is listless and "below par," and sleeps very lightly. There are no pronounced local effects, except occasionally excoriation of the vulva. It has no connection with nocturnal enuresis, beyond that they are both apt to occur in children with weak and therefore badly controlled nervous centres. If the symptoms just described lead to the suspicion that the child masturbates, and she is asked about it by someone in whom she has confidence, she will admit it. The habit is to be cured not by medicines, or surgical operations, or scolding, or punishment; but by seeing that the parts are kept clean and dry, and by securing the child's confidence, and setting before her a high ideal of conduct.

* "Diseases of Spinal Cord," N.N.S. Trans., p. 219.

It will be seen that masturbation in children is far more important as an agent in lowering the general health, producing neurasthenia, and deteriorating character, than as a cause of local disease. Whatever effects are produced by occasional masturbation in the adolescent and the adult must, *à fortiori*, be more marked when the habit is begun at an earlier age. My impression as to the effect of masturbation in the adult is that in the frankly sensual pagan woman, who gratifies her impulse and thinks no more about it, masturbation does little harm. The patients who suffer from it are the very sensitive religious people, who think it a great sin, and are continually struggling against it. It is the struggle, as much, or more than the masturbation, that weakens the nervous system, and keeps attention fixed on the genital organs. Some tell the doctor of their struggles, others of their symptoms, which are those of neurasthenia.

Prevention of pregnancy.—This is now common. People often say they do it because they cannot afford to have children. Those who give this excuse are always the well-to-do, and they mean that they cannot have children without lowering their standard of luxury. The practice is so frequent that I think it necessary to say what I think about its effects on health and the duty of medical men when consulted on the subject.

Its effects on health.—These depend upon the method used. The methods may be divided into three groups.

First.—Methods which aim at preventing the semen from being deposited in the vagina. If this object is attained pregnancy cannot occur. If the woman be one in whom sexual feeling is absent or slight, the effect of such measures upon her will be *nil* or trifling. But if she be sensitive, with strong sexual feeling, the recurrence of sexual excitement without natural gratification will injure her health, will produce chronic pelvic pain, nervous exhaustion, hysteria and functional nervous troubles of various kinds. To borrow a phrase from a popular novelist, "The woman pays."

Second.—Methods which aim at preventing the semen, deposited in the vagina, from getting into the uterus. If this can be done, pregnancy is prevented. As the sexual act is completed, this method is not injurious to health, although

the necessary preparations are nasty. But there is no way, when semen is deposited in the vagina, of surely preventing spermatozoa from getting into the uterus. These methods succeed sometimes, and sometimes fail. They may delay the recurrence of pregnancy; but the woman, if fecund, is pretty sure eventually to become pregnant in spite of them. Women in whom such methods seem to have succeeded would probably have been sterile without them.

Third.—Methods which aim at killing the semen which has been deposited in the vagina. If this is done, pregnancy is prevented. But if a single spermatozoon escape the toxic agent, pregnancy may occur. Hence this method often fails. It is not injurious like methods of the first class, and it is less nasty than those of the second. Being sometimes successful, it often delays the recurrence of pregnancy.

The duty of medical men.—It will be seen that you cannot tell patients that in whatever way pregnancy be prevented, and in every case in which it is done, their physical health will suffer, for often it does not. Nor is it any use quoting to them a moral law which they do not recognise. But I think you should advise patients against any such practices. You may point out that women who do not have children are more liable to ovarian tumours than those who do.* The joy of maternity is the crown of a woman's life. Childless marriages afford a larger proportion of unhappy marriages than fertile ones. A young couple who successfully prevent pregnancy are laying up for themselves a miserable old age. When it is too late they come to feel the force of the French cynic's observation, that "Life would be tolerable but for its amusements." A couple who have one child and then prevent the arrival of any more inflict on that child a grievous wrong. The companionship during childhood of brothers and sisters is worth far more than money left when the legatee is not in need of it. It is by considerations such as these, rather than by predictions as to health which will not always be verified, that we shall best guide short-sighted people for their good in this important matter.

* *See* Sir John William's Cavendish Lecture, *Lancet*, 1897.

CHAPTER XLVIII.

STERILITY.

Matthews Duncan was the first to apply scientific method to the study of sterility. Before the publication of his Goulstonian lectures on sterility in women the text books contained little besides hypothetical statements, many of them incorrect, which were copied from one book to another. The books specially on sterility were little better than advertisements.

Absolute and relative sterility. Sterility may be either absolute or relative. Absolute sterility is that in which there is no child, no miscarriage, no abortion, however early. Relative sterility is that in which a woman produces children in number not according to her condition, age, and length of married life. Advice is comparatively seldom sought about relative sterility; and it is even less amenable to treatment than absolute sterility. About 10 per cent. of married women are absolutely sterile.

The causes of sterility may be classified as follows:—

(1) Cases in which the woman is not in fault: male sterility; incompatibility.

(2) The great and irremediable cause: age.

(3) Defective development of the ovaries: hitherto incurable.

The first two of these offer no excuse for treating the woman; the last has given occasion for much bad treatment.

The following causes are those that legitimately call for treatment:—

(4) The causes of sterility curable by the surgeon: dysmenorrhœa and dyspareunia.

(5) The causes curable by the patient: unhealthy modes of life.

(6) Diseases calling for treatment on their own account, and by which sterility may possibly be caused.

Incompatibility.—In some cases of sterility there is no fault either on the male or female side. Husband and wife

may each be capable of procreation, but there is an incompatibility between them which prevents them from procreating with one another. Breeders of animals find this. Sometimes a mare is put to a stallion known as "a sure getter," but does not get in foal, even after the trial is repeated. She is covered by another stallion, and gets in foal at once. Similarly, cases occur in which a man has begotten children by one wife, marries again, and his second wife is sterile. Then he dies, his widow remarries, and is fertile by her second husband. This incompatibility is a cause of sterility which we can neither explain nor cure. I know of no estimate of its frequency.

Male sterility.—The cause of sterility in marriage is oftener in the female than in the male. The difficulties of investigation prevent precise statements; but Gross,* the writer who has investigated the subject most carefully, estimates that the male is in fault in about one case in six. The chief causes of male sterility are: (*a*) absence of living spermatozoa in the semen (which condition may be present in a male quite potent as to intercourse); (*b*) absence of semen; and (*c*) impotence. The causes and treatment of these conditions are not within the scope of this work.

Age.—The greatest cause of sterility in woman is age. The following table from Duncan's work shows its influence.

Age at Marriage	15–19	20–24	25–29	30–34	35–39	40–44	45–49
Percentage of wives bearing children within two years of marriage	43·7	90·5	75·8	62·9	40·9	15·4	4·3

The following table shows the effect of too early marriage.

Age at Marriage	16	17	18	19
Percentage of wives bearing children within two years of marriage ...	12·9	30	46·4	57·8

* "Impotence, Sterility, etc.," p. 87.

These tables show that fecundity is greatest in women married between the ages of twenty and twenty-four. Of women married before this age, the earlier they are married the greater the prospect of sterility. Of those married after this age, the later they marry the more likely are they to be sterile. As Duncan says, no cause of sterility approaches age in extent and power.

Developmental faults.—Certain congenital defects and malformations have been alleged to be commonly the cause of sterility, and much treatment has been devised to remedy them. These congenital causes, of course, act alike at all ages—the woman will be sterile whether she is married at forty, at thirty, or at twenty. Hence their maximum effect cannot be more than the sterility of women married between twenty and twenty-four. Kleinwächter, from an analysis of 648 cases of sterility, found developmental faults present in about one-fifth.

These faults in development affect:—

The ovary.—Absence of ovaries is so rare that its occurrence has been doubted. Smallness of the ovaries with amenorrhœa is less rare. We know not how small an ovary may be and yet produce ova capable of development if fertilised. Hence we cannot diagnose this condition before marriage. If the ovaries are absent, or so imperfectly developed that ova are not discharged, reproduction is impossible.

Smallness of the uterus.—Imperfect development of the uterus is said to cause sterility. It is generally the result of imperfect development of the ovaries, and for that reason is associated with sterility. The condition essential for fertility is the production of ova. When these are produced and spermatozoa can get at them, pregnancy may follow in the Fallopian tube, or in a cornu of the uterus so badly developed that its cervical canal cannot be perceived. If the uterus has no cavity, pregnancy cannot take place, but anything short of this will allow of pregnancy.

A uterus is essential only for safe delivery, not for pregnancy. Much bad treatment has been proposed to make the uterus develop in order to favour pregnancy. I know of no evidence that anything except marriage will make a uterus develop. Putting things inside it will sometimes make it bleed, but this is not making it develop. Electricity has been

used in various ways for this purpose, but I know of no evidence that it has any effect at all. If the fault is really in the ovary, to stimulate the uterus is like flogging a carriage to make the horse go.

Stenosis.—Sterility has been said to depend upon congenital narrowing of the uterine canal, obstructing the upward passage of semen. Persons agreed as to the commonness of these strictures, did not agree as to where they were: whether at the internal or external os. The alleged stricture at the internal os would admit a metrotome, an instrument as big as a No. 6 catheter! The truth is, that no such thing as a congenital stricture of the internal os uteri has ever been seen. Congenital smallness of the os externum, so that instead of being a slit about a quarter of an inch long, it is a little round hole too small to admit a probe, is occasionally seen, but is rare. With it there is usually no dysmenorrhœa. Cases of labour are met with, in which, in spite of strong pains recurring frequently for many hours or even for days, the os externum remains too small for the membranes to bulge through it.* These cases are always first labours; and I think them probably the result of congenital smallness of the os externum. If this supposition be correct, smallness of the os externum does not entail sterility. For the sake of preventing difficulty in labour, I think it proper, if anything else has to be done to the patient, to enlarge a small os externum by incision. The foundation of the stricture theory is the fact that dilatation of the cervix sometimes cures sterility.

The foregoing causes of sterility are practically incurable. I come now to the conditions by which a few cases of sterility are really caused, and by the removal of which some cases of sterility are really cured.

Spasmodic dysmenorrhœa.—I have stated in Chapter XLVII. that spasmodic dysmenorrhœa is often associated with sterility, and with absence of sexual desire and pleasure; and that in some of these cases dilatation of the cervix cures the dysmenorrhœa, establishes sexual desire and pleasure, and sometimes cures sterility. I cannot tell how often this happens, because the subject is not one upon which routine inquiry can be made; but I have been told of it often enough to make

* See the author's work on "Difficult Labour," p. 248.

me sure that it is more than coincidence. It may be thought that it is perhaps due to abstinence from attempts at intercourse while the patient is under treatment, together with the surgical manipulations, the parts being thus rendered more tolerant of contact. But I think not, for one patient, whose husband was abroad when the cervix was dilated, clearly told me that an alteration in feeling had taken place before she rejoined her husband.

We know not how dilatation of the cervix does this. My conjecture is that during the sexual orgasm there is a peristaltic movement of all the organs formed out of the duct of Müller which helps the coming together in the uterus of ovum and spermatozoa. Duncan thought it almost certain that during orgasm there is dilatation of the uterine ends of the Fallopian tubes and the cervix. In dysmenorrhœa the disturbance of uterine polarity, which causes painful uterine contractions to accompany menstruation, probably prevents this peristaltic movement during coition from taking place; and dilatation, by temporarily paralysing or inhibiting the circular fibres of the os internum restores uterine polarity, and thus establishes normal painless uterine contractions during menstruation and the normal function of the genital canal during intercourse, which should favour impregnation.

The circular fibres of the cervix uteri can be paralysed or inhibited in other ways than by dilatation. The cervix may be cut. But this involves a little danger, and has no advantage over dilatation. The only cases in which it should be practised are those in which the os externum is small and circular. Then the vaginal portion should be divided and the os internum dilated; the former proceeding being to prevent delay in the first stage of labour should the treatment be successful in removing sterility.

An intra-uterine stem may be worn. The presence of a stem in the canal makes it dilate. Therefore cure sometimes follows this treatment, as it does dilatation of the cervix. But I know not that these stems cure sterility when dilatation has failed. They are dangerous. The patient must be under constant medical supervision while wearing one; which is possibly a recommendation to the sort of persons who write books to say that they can cure sterility. They have been

lauded as being even an infallible cure for sterility; but no one who has used them has ever published his results in a scientific form. Matthews Duncan, at the time he wrote his lectures on sterility, had for years had a large practice among the higher classes—those among whom are found patients willing to undergo prolonged and expensive treatment for sterility, and whose sterility or fertility is widely known. It must have often happened that patients to whom he had given sound advice went afterwards to persons who put in stems. Had these stems cured the sterility Duncan must have heard of it. But his lectures contain no mention of their curative value, nor did he use them. The only cases I have known in which pregnancy followed their use and appeared to result from it have been patients for whom I had advised no treatment, on the ground that they had not been married long enough to make it certain that they were sterile.

Dyspareunia.—It is not *necessary* for pregnancy that sexual intercourse should be complete. Medical literature abounds with cases (often described as pregnancy with "imperforate" hymen) in which, when labour has come on, the vaginal orifice has been found so small as to require surgical enlargement. In such cases sexual intercourse cannot have been complete. In practice you will sometimes find patients surprised when told they are pregnant, because they had taken precautions which they thought made it impossible. Such cases show that deposition of semen at any part of the vagina, or even the vulva, *may* lead to pregnancy. The spermatozoa have a power of spontaneous locomotion which enables them to get to the uterus. But pregnancy is more likely to take place if intercourse is complete; that is, if the semen is deposited in the upper part of the vagina, and the woman has the sexual orgasm. One of the most frequent ways in which sterility is cured is the removal of some impediment to complete intercourse. What these impediments may be I have described in Chapter XLVII.

Profluvium seminis.—It is common for sterile women to complain that after intercourse the semen runs away, and to think that this is why they are not fertile. But this happens in many fertile women, and it is improbable

that *all* the semen ever runs away. Patients have been advised to raise the hips on a cushion, and to assume the knee-elbow position, after intercourse, in order to prevent this. This is a harmless treatment, probably also useless.

Artificial insemination.—Acting on the mechanical theory that sterility was often because semen could not get into the uterus, Marion Sims proposed to cure it by artificial insemination, that is, by sucking up the semen with a syringe and injecting it into the uterus. This has been much practised abroad. In England it is not, or is very little, used, not only because it is distasteful, but because it is so generally a failure that it is probable that, in the few cases reported as successful, pregnancy would have taken place had the operation not been done. I therefore think it superfluous to give any details about it. There is only one rare class of cases in which this may be proper, viz., those in which there is either a congenital defect (hypospadias), or a perineal fistula, in the male, so that semen cannot be deposited in the vagina. John Hunter is said by Sir Everard Home to have artificially inseminated a woman with success in such a case.

Influence of sexual feeling.—Matthews Duncan was of opinion that there was some relation between absence of sexual feeling and sterility, and his opinion is weighty. There is no doubt that pregnancy often occurs in women who have no sexual desire or pleasure—whether less often than in those whose sexual feeling is normal, I know not. There are women who think they can tell, by some difference in their feeling, the occasion on which they conceived. Beyond this, and what I have said upon the subject in relation to spasmodic dysmenorrhœa, I know nothing of the matter.

The majority of cases in which sterility is cured are cured in the ways above described: by removing dysmenorrhœa, or dyspareunia, or both. But they only form a small proportion in comparison with the cases of sterility that are not cured. If you have cured dysmenorrhœa and dyspareunia, you cannot say that the patient will become pregnant; for the sterility may depend upon age or incompatibility, or be the fault of the husband. Therefore never promise to cure sterility.

There are certain modes of life unfavourable to fertility.

If you can persuade the patient to alter such a mode of life, she may possibly become pregnant. Therefore I have said that these are curable by the patient.

Too frequent intercourse.—There is reason for regarding this as a cause of sterility. Its effect is shown in the well-known sterility of prostitutes. According to Gross* it also affects the male. "The frequent repetition of the act of coition renders the semen more and more watery and scanty, so that it consists merely of the secretions of the accessory glands," but after abstinence spermatozoa are found in large numbers. Hence, when asked to treat sterility, tell the patient that pregnancy is favoured by moderation in this respect. Change of air, by effecting a temporary separation between husband and wife, may be beneficial in cases in which this cause of sterility is suspected.

Alcohol.—The effect of alcohol in causing pelvic pain has been mentioned in Chapter VIII. This shows that alcohol has an effect on the generative function. Matthews Duncan relates a case in which a woman given to alcoholic intemperance, and for several years sterile, after becoming a teetotaler became pregnant. If in a similar case you can persuade the patient to give up alcohol, you may cure her sterility, and will certainly do her good.

Obesity.—Very fat women are generally sterile. At the age at which childbearing ceases, women often become fat. It seems, therefore, as if the body cannot both produce fat and produce offspring. If a very fat woman desires treatment for sterility, by prescribing a regimen which will remove her superfluous fat you will improve her health and possibly favour fertility. The late Mr. Towers Smith told me that he had treated obese and sterile women who became pregnant when their obesity was reduced. The treatment consists in a dietary deprived of starch and sugar, and plenty of exercise. In a patient of my own, aged twenty-five, who had been married two years and was sterile, was five feet high and weighed thirteen stone and a half, reduction of her weight by two stone was followed by pregnancy.

When a sterile woman has some local disease, and is also troubled by her childlessness, her wish in the latter respect

* "Obst. Trans.," vol. xxxiii.

need not prevent the relief of the local distress. The books written by persons who say that they can cure sterility mention many local conditions as causes of sterility and enormously exaggerate the frequency with which sterility is cured by removing them. Because they are so often said to be responsible for sterility, I must consider some of these local diseases.

Displacements. — Anteflexion is said to cause sterility. This is the natural shape of the uterus in many virgins. The assertion that it causes sterility is irreconcilable with the great fecundity of women married between twenty and twenty-four. I have investigated the relations between backward displacements of the uterus and sterility,* and shown that late in the child-bearing period they are associated with a certain amount of relative sterility; that women having these displacements leave off having children sooner, and that their later pregnancies end in abortion oftener than those who have not such displacements. If this were a mechanical effect of the altered shape of the uterus, it should be observed in patients of all ages who have these displacements; but it is not, it is only in the older ones. I think it is because the state of health which leads to relaxation of the uterine supports, and makes the patient sensitive to slight changes in the pelvis, leads also to early exhaustion of reproductive energy. If a retroflexion of the uterus is causing symptoms, it is proper to relieve such symptoms by treatment.

The following table shows the effect of backward displacements in producing relative sterility:—

Age.	Uteri Displaced Backwards. Average Number of			Uteri not Displaced Backwards. Average Number of		
	Children.	Abortions.	Pregnancies.	Children.	Abortions.	Pregnancies.
Under 25	1·62	·29	1·91	1·5	·6	2·1
25 to 29	2·75	·8	3·55	2·65	·76	3·41
30 to 34	3·7	·87	4·57	4·3	1·13	5·43
35 to 39	5·4	1·3	6·7	5·51	1·22	6·73
Over 40	5·5	1·3	6·8	6·77	1·49	8·26

* "Obst. Trans.," vol. xxxiii.

The only cases in which retroflexion is a cause of sterility are those in which the body of the uterus is so tender that there is great dyspareunia. In one such case, after seven years of dyspareunia and sterility, the patient, after cure of the displacement by vaginal fixation, had a sexual orgasm for the first time, and became pregnant. I think the cure of sterility in such cases is rather by removing dyspareunia than by the change in the shape of the uterus.

Endometritis.—This has been said to be a cause of sterility. It is a word used so loosely that no one can tell without description what anyone means by it. It is applied to the following conditions:—(1) Fungous endometritis. This is an adenomatous growth within the uterus, which requires treatment because it causes hæmorrhage. It is generally treated by the curette, and after such treatment pregnancy may occur. As it is often seen in women who have long been sterile, its influence is probably adverse to pregnancy. (2) Hæmorrhagic endometritis occurring in the course of certain acute diseases. There is no evidence that this produces sterility, but some evidence has been brought forward to show that it is apt to be followed by important diseases of pregnancy and labour—abortion, placenta prævia, and accidental hæmorrhage. (3) Catarrhal endometritis. This may be common, but it produces no symptom beyond leucorrhœa, until it has spread along the Fallopian tubes to the peritoneum. We know not how common it is, because its symptoms are so trifling that patients seldom consult a doctor about it. There is no evidence that it has any effect upon fertility. Papers have been written about the cure of sterility by curettes, cauterising, etc., but none containing any presentation of evidence in a scientific form. In most cases supposed to have been thus cured, either there was no presumption of sterility, or the dilatation of the cervix was the actual curative agent.

Laceration, erosion, and inflammation of the cervix have been alleged to cause sterility. If this were true, large families would be rare. It is negatived by the fact that these conditions are often seen in pregnant women. If the cervix is inflamed, it is proper to treat it; but there is no evidence that by such treatment sterility is cured.

Chronic metritis is often associated with sterility, but we know not which is cause and which effect. In such cases pregnancy is much to be hoped for, because it offers the best chance of cure. Treatment is called for by the disease, but it is seldom that pregnancy follows.

Unhealthy vaginal secretions.—Marion Sims said * that in some cases the vaginal secretions were unhealthy, and killed the spermatozoa; but I know not that anyone else has confirmed Sims's statement. But it is proper to cure, if possible, any disease of the vagina or the parts which pour secretions into it.

Hypertrophy, elongation and unusual shape of the vaginal portion have been said to cause sterility. If the vaginal portion is abnormally long, and causes discomfort, it is proper to cut it off. We know not whether it causes sterility, but from the fact that I have seen no record of a case of labour with elongation of the infra-vaginal portion of the cervix, I suppose that it does. Peculiarities in the shape of a cervix not abnormally long have been observed in the sterile, and, under the name of "conical cervix," assigned as a cause for sterility.† But I know not that anyone has taken the trouble to find out if there is any difference, as to the frequency of a conical shape of the cervix, between those who menstruate with pain and are sterile, and those who have no menstrual pain and when married become fertile. I doubt the relation between any particular shape of the vaginal portion and sterility.

Fibroids are said to be causes of sterility, because many patients who have them are sterile. They do not always cause sterility, for they sometimes cause trouble in labour. Submucous fibroids which cause great bleeding make the patient sterile, for the bleeding prevents the development of the chorion. But the only relation between fibroids which do not cause great bleeding and sterility, is that fibroids occur late in menstrual life, when sterility has generally been produced by age. Fibroids are among the few uterine diseases which affect sterile women and virgins late in life, and therefore they seem to affect a large proportion of

* "Clinical Notes on Uterine Surgery."

† *See* Barnes, "Diseases of Women."

such women. If a fibroid is causing bleeding, treatment is required to stop this, whether the patient wants to have children or not.

Peri-salpingo-oöphoritis.—Those who oppose the routine removal of inflamed Fallopian tubes and ovaries on the ground that it is a mutilation which unsexes the patient, are told that the patient is unsexed already by her disease. This is not the fact. Women who have had pelvic peritonitis, and have inflammatory lumps still in the pelvis, may bear children. In one case in which I removed a pyo-salpinx on one side, and found the ovary and tube on the other side so embedded in adhesions that I could not identify them, the patient had a child a year after the operation. I have seen cases in which the operation has been urged by others upon the patient, as being the only thing that would cure her, and she has afterwards had children. Pelvic peritonitis makes pregnancy less likely, and inflammation in the pelvis sometimes makes the sexual function a cause of suffering; but these are temporary, not invariable and permanent effects.

Dysmenorrhœa, other than spasmodic.—The importance of spasmodic dysmenorrhœa as a cause of sterility will suggest the question, Do other kinds of dysmenorrhœa have the same effect? Membranous dysmenorrhœa certainly has not. I have known patients with membranous dysmenorrhœa become pregnant, and go on passing membranes each month after childbearing. It may be that this disease, though not always a cause of sterility, yet makes the patient less apt to conceive. I know of no evidence upon this point. There are cases of dysmenorrhœa in which it is difficult to say whether the dysmenorrhœa is spasmodic or not. In such a case it may be proper, if the patient wishes nothing left undone, to dilate the cervix. It may cure her, and will do no harm.

Part X.

DISORDERS OF PARTS ADJACENT TO THE SEXUAL ORGANS.

CHAPTER XLIX.

TOO FREQUENT MICTURITION.

This symptom is often denoted by the term "irritable bladder." The words should rather be, as Matthews Duncan pointed out, "irritated bladder," because every bladder is irritable, that is, capable of being irritated.

Too frequent micturition must be distinguished from incontinence of urine. In both conditions the patient may say that she cannot hold her water. But in incontinence the urine is continually flowing away as fast as it is poured into the bladder; while in irritated bladder the urine is retained for a little while, but the call to void it comes too often.

Most conditions which make micturition painful also cause it to be too frequent. This is the case with all inflammatory diseases of the pelvic organs. But not all causes of frequent micturition produce pain in micturition. In this chapter I speak only of those which cause micturition to be too frequent but do not make it painful.

Some of the conditions which produce too frequent micturition are associated with physical signs of disease of the pelvic organs; others are not. Some of these conditions are associated with changes in the urine; others not. In some of them the irritation of bladder is only occasional, the patient sometimes having to pass water with annoying frequency, sometimes being able to go as long as she wants to; in others the irritation is continuous. In some of these latter the trouble is of recent origin, in others it dates as far back as the patient can remember.

Causes of too frequent micturition.—Cases in which frequent micturition is the main symptom may be divided, for convenience of clinical study, into four classes:

1. Those in which there is *no local disease* appreciable by the ordinary methods of local examination.

2. Those in which vaginal examination reveals morbid changes in *the uterus or its appendages.*

3. Those in which no disease can be detected without examination of *the urethra.*

4. Those in which the cause cannot be made out without examination of *the urine:* that is, those dependent on disease of the bladder or kidneys.

1. Consider, first, the cases in which you find *no local disease* either of the uterus or of the urethra, and there is no morbid state of the urine.

A. **Pregnancy.**—Micturition is generally more frequent in *pregnancy* than at other times.

B. **Nervous disease.**—In certain *nervous diseases,* such as locomotor ataxy, the bladder is more irritable than in health. In this disease, although the urine is healthy and the bladder not painful or tender, yet the call to micturition is produced by less tension of the bladder than in health. Duchastelet* has shown by experiment that while in health the call to micturate occurred with a pressure of urine in the bladder represented by + 30, in ataxy a distension represented by + 20 put the patient in pain. The condition is a hyperæsthesia of the bladder.

C. **Smallness of bladder.**—There are some women who are all their lives troubled by being unable to retain their urine so long as they would like to. The irritability is not enough to be a serious source of annoyance to them, except so far as this, that they cannot go into society, on excursions, to entertainments, etc., unless the arrangements are such that they can frequently retire. They may date this back as long as they can remember, and be unable to assign any cause for it. In such cases, the condition may be, as Matthews Duncan suggested, that the *bladder* is congenitally *small,* and will not hold so much urine as that of most women. I know of no measurements that have been made to show that this is

* "Annales Méd.-Chir.," Paris, 1888, p. 112.

actually the case. In these cases there are no physical signs of disease, there is no pain in micturition, and no alteration in the urine. The irritability of bladder is apt to be made worse by various temporary causes, such as a cold, or a cough, or the drinking of a great deal of fluid.

D. **Over-distension of bladder.**—In other cases in which a similar complaint is made, the frequency of micturition dates from some occasion in which the *bladder* was *over-distended.* Matthews Duncan relates a case in which punishment for wetting the bed led a child to retain her urine for so long that the bladder became over-distended, and the result was permanent enlargement of the bladder, with excessive irritability of the sphincter, and consequent frequent micturition. I have seen cases in which similar trouble dated from an occasion on which the patient had to go a very long time without emptying the bladder.

E. **Excessive quantity of urine.**—Micturition may be frequent, not owing to any local change, but from an *excessive quantity of urine,* so that the bladder gets filled too quickly. Thus, in diabetes mellitus, diabetes insipidus, and in hysteria, there is frequent micturition, from quick and frequent filling of the bladder.

F. **Nocturnal enuresis.**—There is one kind of vesical irritability different from the rest, viz., *nocturnal enuresis.* This means that the patient at night, while asleep, involuntarily and without knowing it, passes water once or oftener during the night.

This disease appears to be due to irritability of the spinal centre which presides over micturition. It is a nervous disease; not one depending on any condition of the urinary apparatus. It often runs in families. It is sometimes inherited, and a tendency to other nervous diseases, such as migraine, epilepsy, insanity, hysteria, etc., will often be found to run in the family. It occurs chiefly in children, and usually gets well or is cured before puberty; but sometimes it lasts until after puberty. The ejaculation of the urine does not depend on the quantity of urine in the bladder, but on the state of the nervous centre. It resembles nocturnal seminal emission in the male in being a spasmodic affection, due to weakness of the spinal nervous centre. Nocturnal

enuresis is said to be produced by reflex irritation, such as vulvitis (or in the male, phimosis), by worms, fissure of rectum, or piles (although these latter are not common in young females), ulcers, calculi, or growths in the bladder, or by acid, some think by alkaline, urine.

Treatment.—In the treatment of this disease, such causes of reflex irritation must be sought for and removed. Over-exertion, by weakening the spinal centre may make it irritable; therefore this should be forbidden. Try to break the morbid habit, by directing a nurse to wake up the patient, and make her rise and empty the bladder at regular intervals during the night. The younger the patient, the more successful this treatment will be. If it is not quickly successful, aid it by the following measures. Let the patient sleep on a mattress, as lightly covered as the weather will permit. Forbid a large drink before going to bed. Give belladonna—as much as two grains of the extract may be given for a dose. Order a cold douche to the lower part of the spine before going to bed and in the morning. If belladonna fails, prescribe chloral at night as a suppository, administering about twice the dose in this form that you would give by the mouth (regulating the dose by the patient's age). Sir H. Thompson recommended the injection of a solution of nitrate of silver, ten grains to the ounce, into the bladder, repeated at intervals of a week or two, increasing the strength. Give also general tonics, such as cod-liver oil, arsenic, and steel. The bromides are useless.

Overflow from retention. — In any case of irritated bladder, which the history does not explain, or in which a definite opinion as to the presence or absence of local disease is sought for, you must look at the parts, make a bimanual examination, pass a catheter, and examine the urine. Never forget that very frequent micturition, or even incontinence of urine, may indicate *retention of urine.* Hence when you are told that the patient has within the last few days been unable to hold her water, never omit to *pass a catheter.* Pass a catheter not only to relieve retention, if present, but also to ascertain the condition of the urine. Urine passed naturally by a patient may be mixed with blood or pus from the vagina. Draw the urine off with a catheter, and you get it as it is in the bladder.

2. **Reflex irritation of bladder.**—Take now a case of too frequent micturition in which you find nothing wrong with the urethra, and the urine is healthy.

A. Irritation of the bladder may be due to slight *local causes of reflex irritation.* I have known a tampon of cotton wool in the vagina irritate the bladder so that micturition was too frequent: the proof being that when the plug was withdrawn the patient could go as long as usual without micturating. Duncan mentions the case of a urethral cyst which did not affect frequency of micturition until it was cauterised, and then micturition became frequent until the effects of the caustic had passed away. An ill-fitting vaginal pessary may make micturition frequent. I have known after an operation for vesico-vaginal fistula, the result of which was complete success, the bladder to be during the first few days so irritated by the stitches that urine was passed so often as to make the nurses doubt whether the fistula had been closed. Hæmorrhoids may cause too frequent micturition. If there be inflammatory disease in the pelvis, or a displacement of the uterus, that is sufficient explanation of frequent micturition.

B. **Bladder irritation from descent.**—There is a kind of bladder irritation met with chiefly in women who have had children. This results from relaxation of the structures forming the pelvic floor. Some women who are at most times free from local discomfort, if they get depressed in health from any cause, as, for instance, a cold, or several disturbed nights, get backache and irritation of the bladder. I think this is due to a slight temporary prolapse of the pelvic floor. The degree of prolapse is so slight that it is not enough, in a woman with a healthy nervous system, to irritate the bladder; nor to be detected by examination, because it is not more than is often seen in healthy women. There must be some morbid change to account for this irritability of bladder; and a temporary yielding of the muscles forming the floor of the abdominal cavity is the most reasonable explanation. It is a condition analogous to the aching and watering of the eyes which troubles hypermetropic patients when they get out of health, and which is due to temporary weakness of the ciliary muscle. This kind of irritation of the bladder causes a constant dribbling of small quantities of urine during the day,

not a spasmodic ejaculation at night. The patient is not disturbed while recumbent. Escape of urine is often promoted in such patients by coughing. This bladder trouble is benefited by strychnine and ergot.

There are other cases in which the same change, viz., slight prolapse, is more marked, and then the troubles which it causes are present continually, not only for a few days at a time. The patient tells you that ever since a certain date (usually that of a confinement) greater frequency of micturition has been always present, though sometimes worse than others. With this there is generally some aching in the back and lower abdomen. Remember that these symptoms may be due to a slight degree of prolapse, without the patient being aware that anything comes down. The precise changes in the position of the pelvic viscera which the prolapse causes are immaterial. It makes no difference whether the pelvic floor bulges down without relative descent of the uterus, whether the uterus descends without other change of shape or position, or whether it be unduly anteverted or be retroverted (unless in the latter case it be congested also). The diagnosis in this class of cases and in the one spoken of before, is made by the symptoms, together with the physical signs. The characteristic features are these:—(1) The absence of pain on micturition. (2) The complete relief to the bladder irritation when the patient lies down. (3) The absence of all other symptoms beyond the backache, etc., common to all forms of prolapse. The physical signs are those of the change in the parts forming the pelvic floor, with absence of any signs of disease of the urethra, and of any abnormal constituent of the urine. If the symptoms are temporary only, it may be expected that by restoring the patient's nervous tone, these symptoms will be relieved. If they are continuous, and examination shows a slight degree of descent, or slight cystocele, or retroversion, then the support of a pessary is advisable. For fuller information see Chapter X.

C. **Dislocation of the urethra**: its being either pulled upwards by the gravid uterus or by tumours, or dragged downwards by cystocele or prolapse of uterus has been described as a cause of irritable bladder. The gravid uterus does not pull up the urethra until labour has begun. Such

pulling up of the urethra as occurs with tumours, unless accompanied by pressure on the urethra or by much congestion of the pelvic organs, does not irritate the bladder. Prolapse of the urethra occurs with cystocele: but apart from cystocele I have never seen it. I am not aware of any difference in the symptoms of cystocele depending upon the extent to which the urethra is dragged down with the bladder. According to Baker* "settling of the uterus, or of an ovarian cyst after puncture," may cause the lengthened urethra to double upon itself so that a sharp angle is formed in its course. This I have never seen.

3. **Local disease.**—By looking at the parts you will discover the presence or absence of disease of the meatus, or of the vulva, or of vaginitis or vulvitis.

Stricture of urethra. — Frequency of micturition may be due, in the female as in the male, to *stricture of the urethra*. You will ascertain this by passing a catheter, or rather by attempting to pass one. The female urethra is bigger than the male: No. 14 male catheter will usually pass the female urethra easily. A female urethra which will not let No. 10 catheter pass is the subject of stricture. Stricture of the urethra is less common in the female than in the male. It is important to identify it when it does exist, because the result of treating it is satisfactory.

Causes of stricture.—There may be congenital *smallness of the meatus*. I have not seen a well-marked example of this. Such congenital smallness is not disease, and therefore interferes not with function. Horrocks† mentions a case in which it was impossible to pass a catheter, and in the patient, a girl aged nineteen, there had been "difficulty of micturition, chiefly incontinence, from birth," and there were "obvious congenital deficiencies;" but it is not stated what these were. Congenital atresia of the urethra is sometimes met with in infants; but it is incompatible with life unless the urine escape by some other channel—usually a pervious urachus. These great malformations are quite different from mere smallness of the urethral orifice in an otherwise well-developed patient.

The most common cause in the young and middle-aged of

* "American System of Gynecology."

† "Obst. Trans.," vol. xxix. p. 50.

stricture of the female, as of the male urethra, is *gonorrhœa*. It is rarer than in the male; but such numerous cases are on record * that the fact cannot be doubted.

Another kind of stricture arises from *injury* to the urethra during difficult *labour*, leading to sloughing and the formation of a cicatrix, narrowing the urethra. The sloughing which follows labour more often leaves a vesico-vaginal fistula.

The urethra is sometimes surrounded by *thick fibrous tissue along its whole length*, and much narrowed. As the urethro-vaginal septum is the homologue of the prostate gland in the male, this form of stricture, which occurs in old women, may properly be regarded as analogous to enlargement of the prostate in the male. I have known the urethra so narrowed by stricture of this kind as to grip a gum elastic catheter so tightly that, when its withdrawal was attempted, it broke and a bit remained sticking in the urethra. The urethra may be narrowed by the fibrous overgrowths of *esthiomène*.

The cicatrisation of a *chancre* situated on the urethra may narrow the canal so as to produce the effects of stricture.

Symptoms.—Whatever the cause of stricture, irritation of the bladder and too frequent micturition are the consequence. The diagnosis is made by passing a catheter. An instrument of the ordinary size will not enter. You can only pass a small instrument, and this is gripped. Pass the catheter slowly and note the amount of pain produced. Severe pain caused by catheterisation will point to hyperæmia of the urethra and neck of bladder.

Treatment.—The treatment of stricture of the female urethra is to dilate the stricture with bougies. The canal is so short, and so easily felt through the vagina, that there is no difficulty in doing this. Irritation of the bladder due to stricture of the urethra is cured by dilating the stricture.

4. **Bladder or renal disease.**—In all cases of frequent micturition in which a rough diagnosis made from the history is not sufficient, pass a catheter, draw off the urine, and examine it. The bladder irritation may be from *cystitis*, or it may be from *disease of the kidney*. Frequent micturition is a symptom of Bright's disease; therefore if the urine be free from sediment, test for albumin. In pyelitis and pyonephrosis

* See author's paper, "Obst. Trans.," vol. xxix.

frequent micturition may induce the patient to seek advice. Thus I find among my notes the case of a girl, aged eighteen, who went to a general physician complaining of pain in the lower abdomen and frequent micturition. He sent her to me. I found the urine loaded with pus, and great enlargement of the right kidney. A surgical colleague removed the kidney, and the patient was cured.

The presence of suppuration at some part of the urinary tract is indicated by pus in the urine. In cystitis the urine is ammoniacal and alkaline in reaction. In pyelitis the urine is usually acid; so that if the urine contains much pus, but is acid in reaction, this is a point in favour of pyelitis. But cystitis may be slight, and in that case the urine may contain pus and be acid. In acute pyelitis there may be in the urine the swollen caudate and lanceolate epithelial cells peculiar to the renal pelvis; and this, if the cells are numerous and well characterised, will be proof that the pus comes from the kidney. But in chronic pyelitis these cells may not be present, so that failure to discover them is no proof that the kidneys are healthy. In pyelitis there are signs of irritation in the loins—pain in the loin on the affected side, aching and weakness in the back, these symptoms being increased by pressure. In the ordinary backache, which is so common in women, pressure relieves. There may be a history of renal colic. If there be a tumour in the situation of the kidney, with pus in the urine, the source of the pus will be clear. In pyelitis there are often rigors and hectic fever; in cystitis fever is not common. A conclusive proof that the pus comes from the kidney is the observation that the pus is sometimes abundant, sometimes slight in quantity or absent; and that with these variations there goes alteration in the size of the renal tumour, a diminution in the tumour following a copious discharge of pus. When the amount of pus is great, the urine acid, fever and wasting marked, and the loins tender on pressure, the probability is that the pus comes from the kidney. When there is a tumour, the diagnosis is not difficult. Lastly, an expert in using the cystoscope will be able, with this instrument, if pyelitis be present, to see the pus coming from the ureter.

There may be both cystitis and pyelitis, or cystitis and

Bright's disease. In such cases the diagnosis as to how far the symptoms are due to the bladder and the renal trouble respectively will be difficult. If either of these conditions be present the bladder irritation is a symptom of subordinate importance. I mention them here because the frequency of micturition may be the symptom which leads the patient to seek advice. Disease of the kidney is not peculiar to women, and is therefore beyond the scope of this work. I shall refer again to cystitis in the next chapter.

CHAPTER L.

PAINFUL MICTURITION.

About half the patients who consult a specialist for the diseases of women, complain of pain in passing water. In most this pain is trifling; in a few very severe. The diseases which cause *severe* pain in micturition are the subject of this chapter. I may first briefly mention the most common causes of the slight scalding or smarting in micturition which patients often mention, although not as a thing important enough to bring them to the doctor.

Causes of slight pain in micturition.—A little scalding in micturition may be caused by *concentrated urine*. This is common in such women as have small or irritable bladders, because they often take little fluid, going long without drinking that they may avoid the necessity for micturition. This slight pain is curable by telling the patient to drink plenty of water. The urine is also concentrated in most febrile conditions.

Some slight burning in micturition goes with nearly every *pelvic inflammation*. This is because, first, the same system of vessels supplies all the pelvic organs, and therefore with inflammation of any part within the pelvis there is generally some congestion of the urethra; secondly, because the urine is often concentrated. This pain is seldom severe enough to be a prominent complaint.

There is one pelvic inflammation which you may think of as a cause of painful micturition, and that is *gonorrhœa*. But painful micturition is not so marked a symptom of gonorrhœa in the female as it is in the male. It is sometimes absent, and is seldom severe. Therefore, do not conclude that vaginitis is not gonorrhœal because there is no pain in micturition. And if with what you think is gonorrhœa, there is pain in micturition of extreme severity, some other morbid condition is probably present, as well as gonorrhœa.

Causes of great pain in micturition.—I pass now from these causes of slight pain in micturition to the proper subject of this chapter, cases in which the pain which the patient feels when she passes water is so severe as to make her dread the occasions for doing so, and to disturb her rest at night by its severity and duration. Pain so severe as this depends upon local disease which cannot be found out without local examination. There are three places in which disease may cause intolerable pain in micturition, namely, the *meatus urinarius*, the *urethra*, and the *bladder*. These parts must be examined. I will take them in the order in which we come to them. And first as to the *meatus urinarius*.

URETHRAL CARUNCLE.

The new growth which more often than any other disease is the cause of severe pain in micturition in the female is *urethral caruncle*, "vascular tumour of the urethra." The clinical statements that I shall make about it are for the most part based on notes of forty-one cases that have been under my own care.

Diagnosis.—The diagnosis is easily made by looking at the part, and without looking at the part it cannot be made, for the growths are often so small that it is difficult to identify them with the finger, even if prolonged examination were made, and they are so sensitive that you cannot make a prolonged digital examination. When you look at the part you see a bright red growth, like a miniature cock's comb, or like a small raspberry, springing from the lower margin of the meatus urinarius. It may be broadest at the base and convex on the surface. Caruncles of this shape are small ones. The base may be comparatively narrow and the growth sprout up in several little tongues, like a cock's comb. The caruncle may have a stalk like a polypus. On the surface, although it may be split into lobes, it is bright red, smooth, and shining.

Structure.—Much new light has been thrown upon the nature of these growths by Herbert Williamson and Atlee.*

* *See* "Obst. Trans," vol. xlvii., 1905–6; and "Journal of Obstetrics and Gynæcology of the British Empire," Nov., 1904.

They may be grouped into two main classes: (1) Granulomata, (2) New growths. The granulomata are the result of infection, usually gonorrhœal. They consist of masses of granulation tissue covered by a layer of squamous epithelium. The new growths are formed by proliferation of the normal tissue elements in the urethra. These elements are:—(*a*) squamous or transitional epithelium, (*b*) connective tissue, (*c*) vascular spaces, (*d*) glands. According to the extent to which one of these preponderates, tumours are found which illustrate every intermediate degree between (i.) an adenoma formed by proliferation of gland tissue, and analogous to the prostatic adenoma in the male, and (ii.) a tumour consisting chiefly of large vascular spaces separated from one another by dense connective tissue, in fact an angeioma. The common tumours are of a mixed type: adenoma-angeioma. It is singular, seeing how tender these tumours are, that no one has yet succeeded in finding nerves in them.

Etiology.—They are more common in elderly patients. Thus I find the following distribution as to age among the forty-one cases of which I have notes:—

Under 20	2
20 to 29 inclusive	1
30 to 39 „	6
40 to 49 „	15
50 to 59 „	14
60 to 69 „	3

As to parity, I find twenty-three had had children, eighteen had had none, six of the latter being unmarried. These figures suggest a relation between childless marriage and urethral caruncle; but I think them too few to warrant any general conclusion. The women over forty who had had children had had on the average five children and 1·45 miscarriages apiece, a number less than the average for women at that age.

Symptoms.—The chief and invariable symptom is *pain in making water*. This has been described as "scalding," "stabbing," "smarting," "shooting," "cutting," or "burning" pain. It is felt while the stream of urine is passing over the sensitive growth, and often for some little time, usually

five or ten minutes, afterwards. One of my patients complained of feeling faint and depressed after making water. In women who menstruate, the symptoms are worse at the menstrual period. These growths generally provoke increased frequency of micturition; but I have notes of one case in which the patient said that micturition was not increased in frequency. Two of my patients complained that their rest was disturbed by the frequency with which they had to get out of bed to micturate. One put her case not that she had to pass water often, but that it was constantly dribbling; and another said that she could not retain her urine. But the usual statement is simply that the patient has to make water more often than before. Often there is occasional temporary retention. In eight of my cases I find that the patients complained of being sometimes unable to pass water, and in two the catheter had been repeatedly required. This retention is not mechanical, for the little growths are too small and soft to be capable of stopping the outflow of urine. It is nervous; the anticipation of pain unconsciously restraining the patient from the effort necessary to expel the urine.

The troubles with micturition are those which stand in the forefront; but they are not the whole. There is generally more or less constant *local discomfort.* Thus I find two patients complained of constant aching pain in the private parts; two others of shooting, throbbing, dragging pain in the vagina; and another described a sensation of there being something in the passage. The local suffering is often aggravated by standing or walking, partly from the friction involved in walking, partly from the slight passive congestion brought about by the more difficult return of blood from the pelvis in the erect posture. I find nine patients who mentioned the aggravation of their symptoms by walking, one of them saying that it prevented her from walking. Frequently there is pruritus. I find this a leading complaint in three cases.

The sensitiveness which leads to pain even from the passage of the stream of urine leads to still greater pain when the sensitive growth is touched. Hence digital examination is difficult, and there is such pain in sexual intercourse as

often to render it impossible. In seven cases I find that *dyspareunia* was a prominent complaint; in one of them attempts at intercourse produced hæmorrhage. Some of these growths are so vascular, and their vessels so thin-walled, that they bleed readily; but this is not the rule. Most caruncles bleed with rough handling, but not when lightly touched. In eight cases I find that the patients complained of *hæmorrhage* from the part: produced by coitus, by catheterism accompanying micturition, or when touched. All caruncles are not alike. Some are more tender than others, and some bleed more readily than others.

Associated morbid changes.—The foregoing are the chief troubles referred directly to the growth. The most frequent symptom not connected directly with the growths is vaginal discharge. This was present in eight cases; in seven it was a thick yellow discharge, in one case offensive, and in two mixed with blood, presumably derived from the caruncle. In one case there was cystitis. The knowledge that these growths are often a result of gonorrhœal infection explains the frequency of vaginal discharge.

Clinical history.—The symptoms are of gradual development. As a rule, the longer the symptoms have lasted the larger is the growth. This would lead one to think that the tendency of caruncles is to go on growing. But the symptoms are so distressing that patients seldom go longer than a few months without seeking relief, which is so easily given that we have no knowledge as to how large these tumours may get if they are allowed to grow unchecked. We know no spontaneous cure.

When removed, they tend to recur. Among my forty-one cases, I find five in which recurrence after removal took place within periods of from six months to twelve years. In how many others the growths recurred, and the patients sought advice elsewhere, I cannot say. The recurrent growths are like the first. There is no tendency to anything like malignancy; no infiltration of surrounding tissues; no disease of glands; no secondary growths elsewhere; no cachexia. It is generally believed that the more thoroughly the base of healthy tissue from which the growth springs is removed along with it, the less the probability of re-

currence: for this is what we observe in the case of other morbid growths which tend to recur. But I know of no facts which show greater security from recurrence after any particular mode of removal.

Treatment.—The treatment is removal. So long as the growth is completely removed, it matters little how the operation is done. The parts are too sensitive for anything to be done without anæsthesia. Local anæsthesia may be sufficient. But it is better to administer ether, for then the parts can be examined, and the whole growth taken away with greater certainty. The patient should be secured in the lithotomy position with a Clover's crutch. Then the growth should be cut off, either with Paquelin's cautery-knife or with scalpel or scissors. If the Paquelin be employed, put a rod of wood the size of a No. 12 catheter into the urethra, to guard its opposite wall. Let an assistant (whose fingers should be protected with a piece of wet lint) hold the labia apart. Then enter the red-hot blade below and behind the caruncle, and cut with it upwards and backwards on to the piece of wood, so as to remove the part of the lower urethral wall from which the caruncle springs. The charring of the tissues by the red-hot knife prevents hæmorrhage or septic infection. If scalpel or scissors be used, see that everything used is perfectly clean. Sponge the parts before cutting with 1 to 2000 solution of corrosive sublimate. Cut round the caruncle, so as to remove about one-eighth of an inch of healthy tissue around its base. After removing the growth, sponge the wound with sublimate solution. The hæmorrhage is hardly ever considerable. If an artery should spout, secure it with forceps in the usual way. Dust the wound with iodoform; apply a thick pad of Gamgee tissue well dusted with iodoform, and a T-bandage secured strongly enough to make firm pressure on the wound. Keep the patient in bed until the wound has begun to granulate.

Varicosities of veins about the meatus form bluish red swellings under the mucous membrane. To these the very appropriate name of "*urethral hæmorrhoids*" has been given; for in every respect but their size, and the troubles they give rise to, they resemble the dilatations of veins

seen around the anus. Urethral hæmorrhoids are seldom as large as a pea, although a cluster of veins may now and then be seen. They are purple or bluish in colour, not the bright scarlet of caruncles. The important difference is that they are not tender. The term urethral hæmorrhoid has been applied to caruncles as well as to dilated veins. But this is unfortunate, for there is little in common between the exquisitely sensitive outgrowths of loose connective tissue which we call caruncles, and the dilated and thickened veins, or the red, bleeding, but only slightly sensitive patches to which the term hæmorrhoid is commonly applied. Varicose veins of the urethra require no treatment.

Prolapse of the urethral mucous membrane forms a tumour which needs to be distinguished from a caruncle. The former occurs chiefly in children; while caruncle is a disease of later life. The prolapse of the mucous membrane takes place all round the meatus, or at least round the greater part of it: it forms a protrusion like a purple frill, having an opening in or near its centre: it is not a growth springing from the lower part of the meatus only (Fig. 185). In a few rare cases the whole bladder has protruded, being turned inside out, forming a red tumour on which the openings of the ureters can be seen.* This only occurs in children. When the protrusion is recent, the prolapsed mucous membrane can be replaced; but when it has been external for some time, it becomes swollen and œdematous, and then cannot be reduced. A caruncle can never be reduced. The urethral mucous membrane which has been for a little while outside the meatus becomes of a dark purple colour, and dull on the surface: it has not the bright glistening red colour of a caruncle. The important clinical difference is that the prolapsed mucous membrane has not the tenderness of a caruncle, but bleeds more easily. The caruncle is very tender, but does not bleed unless roughly handled.

When the urethral mucous membrane has prolapsed, the first thing is to obviate the condition – generally a bad

* See a case reported by Dr. J. V. Leech, *Brit. Med. Journal*, Oct. 17, 1896.

cough or violent straining—which caused the prolapse, and then to push back the prolapse if possible. If you cannot push it back, cut off the protruded mucous membrane. It has been recommended to make a buttonhole-like opening in the urethro-vaginal septum, pull up the urethral

Fig. 185.—Prolapse of the urethral mucous membrane. *(By permission of Mr. Bryant.)*

mucous membrane, thus reducing the prolapse, cut off the redundant mucous membrane above, and close the opening. This is a difficult proceeding, especially in children, and I think it better, as well as easier, to cut off the protruded part the nutrition of which has been already damaged.

Inversion of the bladder must of course be replaced, by

pushing it back with a catheter. It has been advised to cauterise the urethra afterwards, to narrow it, with a view of preventing the inversion from again occurring. But this should not be done until the cause of the inversion has been completely removed, and it may then be found unnecessary.

Mucous polypi of the urethra have been described. Outgrowths from the urethral mucous membrane occur like those in the rectum and in the uterus, which are composed of loose cellular tissue and glandular follicles. They differ from the caruncle in being less vascular, and in not being sensitive. They are rare. I have never seen a case. The absence of pain and tenderness would distinguish such a polypus from a true caruncle. Twist off a mucous polypus.

Fibroid tumour occurs sometimes in the urethro-vaginal septum. I have never seen one situated so exactly in the meatus as to suggest that it might be a caruncle. Fibroids form definite, circumscribed, rounded nodules, harder than any other growth or normal structure found in this situation.

I have seen **sarcoma** of the urethro-vaginal septum, forming a nodule on the anterior wall of the vagina near the urinary meatus; and I can conceive that a similar growth might be found involving the lower border of the meatus. But such growths are under the mucous membrane, and present neither the redness nor the tenderness of the caruncle.

Cancer commencing in the urethro-vaginal septum I have seen several times. It might form a red warty growth at the meatus; although I have not seen it presenting precisely these features. A careful digital examination would soon show that it was not a caruncle, by the presence of induration of the tissues below and around the sprouting outgrowth, this induration gradually merging, without definite boundary, into the healthy tissue.

URETHRAL DISEASES.

Suppose now that the meatus urinarius is healthy. The cause of the pain in making water may be *in the urethra.*

There are four conditions of the urethra which may cause great pain in making water. They are :—

1. Chronic congestion of the urethra.
2. Chronic abscess of the urethro-vaginal septum.
3. Suppurated cysts of the urethra.
4. A tender red condition of the urethral mucous membrane.

These conditions are all rare; so that no one has seen them often enough to be able to dogmatise much about them.

1. **Chronic congestion of the urethra.**—This disease was first described by Sir C. M. Clarke. It is seen in pregnant women, or persisting after pregnancy in women who have had many children. Slight degrees of it are not uncommon: very marked degrees of it are rare. The urethra is swollen and tender. It feels like a cord, as thick as the finger or thicker, and it is so tender that there is not only severe pain on micturition, but sexual intercourse is so painful as to be practically impossible. There is continual aching round the loins and in the lower abdomen, and the patient has to pass water frequently. These symptoms are not at once relieved by lying down, but they are improved by prolonged recumbency.

I have seen enough of this condition to satisfy me of the accuracy of the description given by Sir C. Clarke and Dr. West of its symptoms and physical signs. The advice on treatment that I put before you is that which is given by Dr. West, and which I think good. I have not had the opportunity of observing the effect of treatment closely enough to enable me to speak from experience. Complete rest; cold sponging of the part; cold hip-baths; the use of vaginal astringent injections; one or two leeches applied with a glass leech-tube to the swollen and tender urethra, and gentle laxatives. Pressure on the tender part increases the patient's discomfort; and therefore local treatment involving this should be avoided.

In pregnancy the amount of blood going to all the pelvic organs is greatly increased; and the congestion of the urethra that I have described is but a physio-

logical condition carried to a painful degree. I now have to speak of pathological changes which may originate in this congestion of pregnancy, combined with the accidents of labour.

2. **Chronic abscess of the urethro-vaginal septum.**—This is a rare, but definite local disease. I have published a case,* and in the discussion on that paper a speaker described a similar case. The history in my case pointed to the commencement of the disease as congestion of the urethra. There was pain in micturition, which got worse, and with it came frequent micturition, so that at length the patient was in continual pain, the pain after micturition not having gone by the time the patient felt the call to make water again. As the suffering attending micturition developed, sexual intercourse became attended with pain, first slight, at length so bad as to make this function impossible. On vaginal examination there was felt in front a tense, hard, convex, bulbous swelling. When the catheter was passed (which hurt the patient very much), it was found that this swelling was between the urethra and vagina. The symptoms extended over three or four years, a length of time which justifies the epithet chronic as applied to these cases. The points sufficient for diagnosis are: a tense, convex, very tender swelling between the urethra and vagina. These signs and symptoms being present, the only question is whether the collection of pus is a simple abscess, or whether it is a suppurated cyst. You cannot tell which until you have opened the abscess and examined the inside; and this is the proper treatment. If there is a spot on the vaginal aspect at which the wall of the bulging swelling is thin and fluctuation can be felt, the proper course will be to cut into this thin part. If there is no such thin spot, dilate the urethra with Hegar's dilators till the canal will admit the finger. Then insert the finger, and explore the urethral aspect of the swelling. If there be no tendency to point towards the vagina, the abscess wall on the urethral side will be thin. In my case the finger easily broke through the thin urethral wall, the

* In vol. xxviii. of the "Obstetrical Transactions."

matter escaped, the abscess soon healed up, and the patient was well.

3. **Suppurated cysts of the urethra.**—In the floor of the urethra there are glands and mucous follicles; crypts called glands of Littré on the anterior half of its floor, and larger glandular follicles (Skene's glands and Schüller's glands) just within the meatus. Whether these cysts are retention cysts of these glandular structures; or whether they are produced by stretching and bruising of the urethra during labour, separating bundles of muscular and fibrous tissue in its wall, so that the mucous membrane bulges outward in the gap and forms a pouch, we know not. Dermoid cysts also occur in the urethro-vaginal septum. We know little about these structures before they suppurate, because attention is not drawn to this part.

Whatever the mode of origin, it comes to pass that a pouch is formed, communicating with the urethra by a narrow opening. Urine gets into this pouch, decomposes, and inflames the sac. The patient suffers from pain and frequency in micturition, and pain in sexual intercourse. You find in the urethro-vaginal septum a round, tender swelling, in size from that of a pea to that of a hen's egg. When you press upon this tumour, you can squeeze out its contents, which consist, according to the nature of the tumour and the length of time urine has been retained in it, either of urine mixed with pus, or of sebaceous matter, or calcareous deposit. The symptoms often date from a labour, because the compression and stretching of the urethra in labour may lead either to the formation of a diverticulum, or to the rupture into the urethra of a cyst which till then was closed. When the condition of things described has been brought about, a suppurated cyst or diverticulum does not run the course of an abscess, which gradually closes up when a free opening has been made for the escape of pus, but it continues indefinitely in the same state, alternately filling with pus and urine, and being partially emptied by pressure.

Treatment.—The treatment is the excision of the whole or greater part of the cyst wall. The best way is first to lay the

cyst freely open from the vagina. What is next to be done depends upon the condition found and the skill of the operator. The cyst wall should be dissected out, and then the raw surfaces brought accurately into contact, either with catgut sutures or Aveling's coil and shot. If a little bit of the cyst near the opening is left, and the rest is closed, the object of the operation will nevertheless be probably attained, for if the pouch is obliterated, there will be no place in which urine can be retained and decompose, and therefore no inflammation. It may be enough simply to open the cyst freely from the vagina, and then if the vaginal opening be kept from closing by packing it with lint or gauze, retention of fluid in the cyst will be prevented, the urethral opening may close, and then the cyst will be left opening only into the vagina. As urine no longer gets into it, the inflammation will subside, and the cyst will give no further trouble. Braxton Hicks* relates a cure in this way. This is easier to do, but less certain to cure.

If there be much inflammation of the cyst, of the urethra, or of the bladder, it may be the best practice to make no attempt at closing the opening, for two reasons—first, that it is desirable that inflammatory products should have free exit; and second, that inflamed surfaces, when brought together by suture, are apt not to unite well. If there be cystitis it may even be well to make a free incision, extending back into the bladder; but of this I shall speak subsequently.

When a cyst has suppurated, but not opened, or the urethral opening of an inflamed diverticulum has become closed, the condition cannot be distinguished from an abscess. When the pus cavity has been opened, its cystic character will be inferred from its definite, smooth, fibrous wall. But the inside of a diverticulum may be trabeculated, so that the origin of the pus cavity cannot always be surely made out from the feel of the interior. If the cavity be an abscess it will quickly fill up; if it does not it should be treated as a cyst.

4. **Tender red patches in the urethra.**—In these cases the patient complains of severe burning, cutting pain when she makes water. There is nothing the matter with the meatus. You can feel nothing wrong with the urethra. Pass

* "Obstetrical Transactions," vol. xxxii. p. 79.

a catheter. You may find that as the instrument passes, the patient shows signs of suffering, and if you question her she will tell you that the pain the catheter caused is like that which she has every time she makes water.

Before being satisfied with this conclusion, remember that the passage of a catheter, however gently, is disagreeable. Most women will show some signs of this. But if the urethra is healthy, the pain is not great, and when you have accustomed the mucous membrane to the novel contact, you will find that you can withdraw the instrument and pass it in again without provoking indications of pain. In the morbid condition I am about to describe, the suffering caused by the catheter is great, and you will find that each movement of the instrument is as painful as its first introduction. To ascertain the condition of the urethra you must look at its interior with a speculum. Be careful in using any urethral speculum to pass it gently, and to look at the mucous membrane as soon as it is exposed; for the mucous membrane is easily torn, and then it bleeds, and if it is diseased it is more likely to bleed than if healthy. If it bleeds you cannot see what its condition is.

In this tender condition of the urethra you find that its mucous lining, instead of being the same pink colour as the rest of the vulval mucous membrane, is either wholly or in patches of a vivid red, like a urethral caruncle, or of a deep purple.

The first description I know of this condition is contained in a paper by Garstang.* He describes it as "an extremely vascular and painful condition of the general lining membrane of the urethra, and may appear as a patch, or as a ring, or may involve the canal, without the existence of any visible, tangible tumour or excrescence, yet exactly resembling ordinary caruncle in its symptoms and in its entire resistance to all forms of treatment except the total destruction of the diseased part. It may easily be overlooked by any one who even goes so far as to look for the ordinary caruncle." The description of the morbid appearance is accurate, but the symptoms are not the same as those of caruncle. This growth is tender to the touch, so that pain on sexual intercourse is a prominent symptom, while this is absent when the disease is entirely

* *British Medical Journal*, 1882, vol. ii. p. 932.

within the urethra. Nor is it correct as to the resistance of the disease to treatment. Garstang speaks of it as "an allied disease," also existing in some cases of urethral caruncle. It may be allied to caruncle, for the morbid changes resemble one another in that sensitiveness which makes them important. It is not invariably associated with caruncle, for it may occur without caruncle, and a caruncle may occur without morbid change higher up than the meatus. The condition within the urethra differs from the caruncle in that there is no visible tumour. Beyond this I can say nothing about its pathology, for I know of no one who has examined a urethra diseased in this way to find out what the morbid change really is. As the disease is rare, is not fatal, affects a part difficult to examine, and can generally be cured, it is likely to be long before the result of such an examination is put before the profession. Garstang relates five cases, but in only one was there a caruncle as well as the red, painful condition of the canal. I do not remember that there was a caruncle in any of the cases I have seen, therefore the connection between this disease and vascular caruncle is not constant.

A less full description of it is given by Baker.* He says that "typical ulceration is not at all uncommon in the female urethra, most often as a result of urethritis, when they are usually accompanied by other spots of granular erosion: the latter is a term applied to more or less circumscribed patches of mucous membrane which are of a brighter red and more granular appearance than the other parts, and represent losses of the upper epithelial layers, with hypertrophy of the underlying papillæ." Dr. Baker does not say whether his account of the histology is hypothetical, or based on examination, nor how many specimens have been examined.

By erosions I suppose Dr. Baker means the tender red patches which I have described. If so, I submit that they do not look like granular erosions of the cervix; they cause trouble quite different from that caused by erosion of the cervix, and no investigations have been published showing any community of structure. These spots are neither granular erosions nor granulating ulcers. Ulceration of the urethra, syphilitic, lupous, cancerous, or traumatic, only exceptionally

* "American System of Gynecology," vol. ii. p. 487.

causes severe pain in micturition. A granular erosion of the cervix is an adenomatous growth which is not tender. These red spots in the urethra do not look like growths, and give trouble by reason of their tenderness.

It seems to me more closely allied to the purple tender patches on the vulva, which I have described in Chapter XLVII. in speaking of kraurosis vulvæ. In the absence of any examination of the diseased urethra, I cannot assert that the morbid change is identical; but in clinical appearance and behaviour it is.

Diagnosis.—This disease can only be detected by examining the urethra with a speculum. But you may often infer it without causing the patient the pain which, in this tender condition, that mode of examination involves. When a patient has severe pain in micturition, and nothing abnormal is seen or felt, and the urine is normal, this condition is very likely present; and if it be not, the treatment which I advise will do no harm, so that postponement of cure will be the only injury that will result from guessing at the condition instead of using the urethral speculum.

Treatment.—The morbid change can generally be cured by local treatment. I only refrain from saying "always" because I have no right to assume that my experience comprises every case that can possibly be met with. The treatment is to apply a drug to the diseased mucous membrane; and the best is iodoform. The application is most conveniently made by putting in the urethra, once in two or three days, a bougie an inch and a half long, made of two grains of iodoform, or six grains of dermatol, and as much cacao butter as necessary. A little wool put between the labia will prevent the bougie from slipping out. The bougies made of cacao butter are better than those made of gelatine, because they melt more quickly. In recent cases three or four bougies will cure the patient. In cases of long standing more prolonged treatment may be required. Sometimes iodoform hurts the patient; if so, use a dermatol bougie instead.

Garstang used applications of nitrate of silver and of nitric acid: the result was temporary cure. I have not used nitric acid. I should expect the use of so strong a caustic might be followed by stricture. In the painful condition of the vulval

mucous membrane, which this state of the urethra resembles, the use of strong caustics is not beneficial. Others have recommended strong carbolic acid. Dilatation of the urethra has been also recommended. I think this is preferable to escharotic applications. Iodoform is harmless, and if no other morbid condition is present but the one that I have described, iodoform will succeed.

This disease, like urethral caruncle, although it may occur at any age, yet occurs chiefly in the middle-aged and elderly. I have seen it associated with great thickening of the urethra from congestion; but also independent of any such change.

DISEASES OF THE BLADDER.

Fissure of neck of bladder.—The foregoing are the morbid conditions of the meatus urinarius and the urethra, which make micturition painful. Suppose now the case of a patient, who complains of severe pain in micturition, and in whom the meatus is healthy; vaginal examination reveals no thickening of the urethra. You pass a catheter, and it causes at first no pain. The cause is not in the urethra. You may find that, as it passes into the bladder, at one spot, the neck of the bladder, it causes severe pain. You find the urine free from pus, so there is no cystitis. The disease is that variously described as hyperæmia, or ulceration, of the neck of the bladder. The first description of this disease that I know of is by Dr. W. H. Baker.* It is there described as hyperæmia. Dr. Baker rightly says that such hyperæmia, limited to the vesico-urethral junction and unaccompanied by other disease of the bladder or urethra is rare. He describes it as consisting in the fact that a few tortuous blood-vessels, evidently veins, run over an otherwise healthy mucous membrane. According to him there is neither ulceration nor fissure. He remarks that "it seems almost incredible that so slight a deviation from a normal condition should create so great a disturbance to the nervous system." Dr. Baker gives a list of hypothetical causes of this condition. He describes the symptoms, and his paper is illustrated with coloured plates, which show the condition as seen with the cystoscope. The illustrations show no other morbid change than the hyperæmia.

* Vol. vii. of the "American Gynecological Transactions."

Baker also describes as a different morbid condition "*Fissure of the vesical neck.*" This, he says, correctly as I believe, "corresponds in every way to fissure of the anal sphincter." He says it occurs as a "linear ulceration, a centimetre or less in length, at the bottom of one of the folds of the vesico-urethral junction." He gives a hypothetical account of its causes.

The symptoms are extreme pain in micturition, persisting afterwards, and great frequency of the call to empty the bladder. Sometimes a little blood escapes with the urine. The symptoms, Baker correctly says, greatly resemble those of cystitis and of hyperæmia of the vesical neck. The urine is clear, and there is tenderness about the vesical neck. When the bladder is examined with the cystoscope—a proceeding for which anæsthesia is desirable—the fissure is seen as a small greyish ulceration, with red inflamed edges, at the vesical neck.

This description is correct. With regard to the bladder, as well as other organs, the use of instruments which enable us to *see* diseased parts, instead of inferring the nature of the morbid conditions, must in time bring greater knowledge about them, and greater power of treating them properly. But we have not yet reaped practical advantage from the cystoscope in these cases. The diagnosis between fissure of the neck of the bladder and cystitis is easily made by the presence or absence of pus in the urine. The diagnosis between fissure and hyperæmia may seem to need the cystoscope. I think Dr. Baker's writings on this subject among the most valuable that have appeared. I agree with him that it is almost incredible that the slight morbid change which in these cases he has seen with the endoscope should cause such symptoms. I know also that it is not always easy to see every part of the inside of the bladder with the cystoscope. Biassed, perhaps, by these two considerations, I suspect that in Dr. Baker's cases, in which hyperæmia was all that he found, fissure may have been present, although not detected.

Accepting Dr. Baker's differentiation, the fact remains that, whether fissure or hyperæmia be the condition, the treatment is the same; and therefore we at present gain nothing by the exacter diagnosis.

Treatment.—Given a case in which there is severe pain in micturition, nothing the matter with the urethra to account for it (demonstrated by examination of the urethra and by the failure of urethral treatment), the first thing in treatment is to *dilate the urethra under anæsthesia.*

As Baker correctly says, similar fissures may be present in cystitis. Their presence or absence makes no difference in the treatment. It makes a difference in the prognosis, because cystitis takes longer to get well than the simple fissure of the vesical neck. The best way of dilating the urethra is with Hegar's dilators. Pass these up to 16 or 17, and the urethra will then admit the finger.

Advantages of dilatation of urethra.—The advantage of dilatation of the urethra is twofold. First, it sometimes seems to act upon these painful conditions of the neck of the bladder, as stretching the sphincter ani does in fissure of the rectum. The stretching of the muscle for the time paralyses it and abolishes painful spasmodic contraction. Fissure of the rectum in all probability depends upon the exposure in the ulcer of a sensitive nerve twig. Possibly in stretching the sphincter this is torn across. In stretching the neck of the bladder, the sphincter is for a time paralysed, and possibly sensitive nerve twigs are torn across. Whatever the mode of action, it is a fact that in cystitis temporary improvement is the invariable result of stretching the urethra; and in these painful conditions of the urethra and neck of bladder, temporary benefit always follows. Sometimes stretching the urethra is enough to cure, but this is not the rule. Still, were there no other reason for dilating the urethra, this temporary benefit, with the possibility of permanent cure, would make it worth while to perform this little operation. Dilatation of the urethra has another advantage. It facilitates diagnosis; with the finger in the urethra you can feel the inside of the bladder, and detect any new growth, thickening, or inequality.

Objections to dilating urethra.—There are two objections to dilating the urethra. One is the risk of septic infection; the other that of permanent loss of control over the bladder. The operator should take care that his hands and his instruments are aseptic, and should lubricate

them with an antiseptic lubricant before touching the urethra. I have never known incontinence of urine follow dilatation of the urethra to the degree necessary to admit the finger. But I have known dilatation beyond this point to be followed by this calamity. I say not that incontinence of urine necessarily follows if the sphincter is dilated beyond the size of the finger, but only that there is risk. This risk ought not to be incurred, because if the finger can be put in the bladder, that is enough for diagnosis. If treatment of the inside of the female bladder is required—if there is a stone, a new growth, or a foreign body to be removed—it is bad surgery to try and remove it through the urethra. Examine the bladder through the urethra; treat it through the vagina.

Vaginal cystotomy.—Assume, now, that the urethra has been dilated; no disease of the bladder has been found, and the temporary improvement produced by the dilatation has not persisted. Applications to the urethra, if they do good, do good quickly. I have seen cases in which persevering local treatment—cauterising, and dividing the base of the ulcer—has failed. The surest, quickest, and least disagreeable way of curing the patient is by vaginal cystotomy. Anæsthetise the patient. Put her in the lithotomy position. Put a director in the urethra, and see that it is held in the middle line. Open the bladder from the vagina by cutting upon the director. If the incision is median no important part can be wounded. The opening should be large enough to admit the finger. It is necessary next to prevent the incision from healing. One of the indiarubber stems known as Greenhalgh's may be used for the purpose; or the vesical mucous membrane may be sewn to the vaginal on each side by a catgut stitch. I prefer the former.

The effect of this is that the bladder is kept at rest. All pain ceases at once; and if the artificial fistula is kept open long enough, the ulcer heals, and then the fistula can be closed, and the patient remains well.

Although she is free from the suffering for which the operation was done, yet the patient for the time is continually wet. The best way of minimising the discomfort of this is to keep the patient on what is known as a fracture bed: that is, a bed provided with a receptacle into which the urine

can flow. The absolute rest in bed favours the recovery of the bladder, and so is beneficial. I have had various urinals tried; but none is satisfactory.

Such an incision into the bladder contracts to a canal only large enough to admit a probe and sometimes heals. One reason why I prefer not to stitch the mucous membrane of the bladder to that of the vagina is because it is more likely to heal spontaneously if this stitching is not done. It is impossible at present to lay down a rule as to how long such a fistula should be kept open. Relief follows at once when the fistula is made, and if when it heals relief continues, nature has shown us what is a sufficient time in that case. I have found two months a sufficient time, the patient being in bed. If symptoms return as the fistula heals, the passage of a sound will easily break it open.

Baker keeps the patient in bed for only a few days, and then fits on a urinal, and allows the patient to get up and enjoy fresh air and exercise. The fistula is kept open for six months or more. Dr. Baker does not close the fistula until the bladder has ceased to be tender; nor, in cases of cystitis, until pus or blood has disappeared from the urine. This plan has the advantage that the patient can attend to her family duties, and get the benefit of the sun and air. But I think the disadvantages overweigh these advantages. First, we know that all visceral inflammations get well more quickly when the patient is kept at rest in bed. Second, there is no way that I know of by which a patient with a vesico-vaginal fistula can be kept dry while she is up and about. A urinal will collect some of the urine, and prevent the patient from being quite so wet as she would be without it. It can be adjusted so that it will for a little while receive and retain all the urine, but it soon gets displaced and ceases to do its duty perfectly. These two drawbacks, slowness of cure and impossibility of keeping the patient quite dry, are in my judgment greater evils than two months' bed.

Cystitis.—The conditions that I have been describing are all rare, have not long been known to the profession, and are little noticed in text-books. A commoner cause of painful micturition is cystitis. This malady is found out by the condition of the urine, which is alkaline and contains pus.

Cystitis is not peculiar to women, and I therefore think it beyond the scope of this work to enter into detail upon the conditions which in both sexes alike cause cystitis; or upon the effects of cystitis which occur in both sexes. I shall describe only those features which are peculiar to cystitis as it occurs in women. These peculiar features are (1) that the female bladder can be more easily explored, and (2) that it can be more easily treated than the male bladder.

The exploration of the female bladder.—The female bladder is easily explored, because the female urethra is so short and so easily dilated. This makes the inside of the bladder accessible both (*a*) to touch and (*b*) sight. I have already described (*a*) how the urethra can be dilated and the bladder explored by the finger introduced through the dilated urethra. (*b*) Visual examination of the interior of the bladder has been made practicable by Pawlik. His method, with some modifications, has been introduced to English-reading surgeons by Howard Kelly. The essential features of Pawlik's method are these: that when the patient is placed with her pelvis so raised as to make the intra-abdominal pressure negative, and the urethra is held patent with a speculum, air enters the bladder and keeps its walls apart. Then if the bladder be emptied of urine, its walls can with a good light be inspected through the speculum.

How to inspect the interior of the bladder.—The inside of the bladder can be looked at through a small speculum without dilating the urethra. It then is unpleasant rather than painful to the patient, and can be done without anæsthesia. But with a small speculum it is so difficult to recognise what is seen that only a person very experienced in such examinations will get much information; and even such a person will have to make a prolonged examination; which is very disagreeable to the patient. To get a good view, so that observations may be free from error, the urethra must be dilated, and a large speculum used: and this cannot be done without anæsthesia.

The anæsthetised patient is held in the lithotomy position by Clover's crutch, with her pelvis well raised on cushions. The bladder is emptied as far as a catheter will do it. Then the urethra is dilated with Hegar's dilators. This may be

done up to No. 17 (that is, a dilator 17 millimetres in diameter) without risk of subsequent incontinence of urine. Then a speculum, a polished metal tube with a trumpet-shaped end, provided with an obturator, is inserted (Fig. 186). Kelly speaks of using specula having a diameter of 20 millimetres; but I have never gone beyond 17; and I know of one case in which a considerably larger one was used, with the result of producing permanent incontinence of urine.

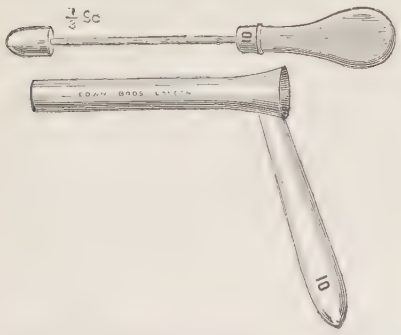


Fig. 186.—Urethral speculum. (*Pawlik-Kelly.*)

The examiner puts on a laryngoscopic mirror. He has either so placed the patient that he may be opposite a window, or he has a lamp, electric or other, so placed that the light from it may be reflected by the mirror into the speculum. There will be a little urine in the bladder. As much of this as possible is sucked up by a syringe having attached to it a bit of india-rubber tubing which is passed into the speculum. The mucous membrane is then completely dried by swabbing it with cotton wool held with forceps.

When this has been done, the inside of the bladder can be inspected. By turning the speculum about 30° to one side or the other, the ureteral orifices can be brought into view. A suitable catheter can be passed into it. (Figs. 187, 188.) Sometimes the ureteral orifice is visible only as a dimple, or a fine crack, and can be identified only by seeing urine escape from it. When inflamed it may be more easily seen as a round hole in a circular eminence; and if the renal pelvis be inflamed, the flow of pus will mark out the ureteral orifice more distinctly than that of urine.

Value of Pawlik's method.—This method of looking at the inside of the bladder is an improvement which in some cases gives us information that we could not otherwise get. When you are doubtful whether pus in the urine comes from the bladder or the kidney, or whether one or both kidneys are

diseased, by this method you can see what comes from the ureter. If cystitis be tubercular, the tubercles may be seen. But in most cases of cystitis in women you can find out the cause as well by the finger as by inspection.

The causes of cystitis in women.—It may be useful if I mention here the ordinary causes of cystitis in women.

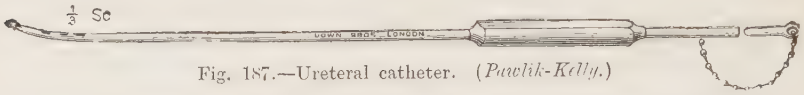


Fig. 187.—Ureteral catheter. (*Pawlik-Kelly.*)

1. **Retention of urine,** from any cause, if prolonged enough, may set up cystitis. (*See* next chapter.)

2. **Entrance of microbes.**—The microbes most often to blame are the microbes found in the lochia of puerperal women, the various kinds of which are often comprehensively denoted by the adjective "septic." It is doubtful if the gonococcus alone can cause cystitis. The microbes are often carried in by the catheter. A catheter which is often used should be kept lying in solution of sublimate 1-2000, and should be lubricated with sublimate glycerine before use. The parts

Fig. 188.—Flexible ureteral catheter. (*Pawlik-Kelly.*)

around the meatus urinarius should be washed, or wiped with sublimate glycerine before an attempt is made to pass the catheter. We know not all the conditions upon which the power of microbes to cause cystitis depends, for sometimes after abdominal section cystitis will develop in spite of antiseptic precautions, while catheterism of healthy young women for hysterical retention was hardly ever followed by cystitis, even in pre-antiseptic times, when no precautions to ensure the cleanliness of catheters were taken.

3. **New growths** in the bladder—tubercle, cancer, polypi, villous growths. These are all rare. They all cause hæmaturia, as well as pyuria. I should expect that a tubercular

bladder, if opened and drained, would get well; but I know not of any case that has been observed to do so. Cancer of the bladder is generally secondary to cancer of the uterus, but it may be a primary disease. It has been treated by extirpation of the whole bladder, but as this operation has very seldom been done I refrain from transcribing an account of it.* The diagnostic marks of cancer are those which characterise cancer in every part of the body; viz., the presence of new growth, infiltrating all tissues and spontaneously breaking down. The finger feels either a warty growth or an ulcer, with friable surface, and thickened base and edges. Polypi of the bladder may be fibromatous, myomatous, sarcomatous, or adenomatous. A polypus—that is, a stalked tumour of the bladder—either in bladder or urethra, is very rare. If present, it will be detected with the finger. If its stalk is thin, it may be detached with the finger-nail. With villous tumours or fibro-papillomata of the bladder, hæmorrhage is the most conspicuous feature. The tumour can be detected with the finger.

4. **Foreign bodies in the bladder.**—The commonest of these is stone. Stone in the bladder is less common in women than in men, because the shortness and dilatability of the female urethra permit a small stone to be passed by that canal† more easily than through the longer and narrower excretory duct of the male bladder. There may also occur bones, from the opening of an ectopic pregnancy: bone, hair, irritating sebum or masses of solid tissue, from a dermoid cyst; pus from perimetric, parametric, or other abscesses; and foreign bodies put in through the urethra by the patient.

Course of cystitis.—In cystitis from retention, when the retention has been relieved, the natural course of the disease is towards recovery. How long recovery takes depends upon the extent to which the bladder wall has been damaged by the retention. It may be so damaged that the whole or part of the mucous membrane is killed and separated. The whole mucosa, with a good deal of muscular fibre, may be detached and lie like a collapsed bag in the bladder; or a large piece of mucous membrane may be detached. The exfoliative

* Pawlik, *Amer. Journal of Obst.*, 1890, p. 1141, and Mayo Robson, *Brit. Med. Journal*, Nov. 8, 1902, p. 1519.

† See Phocas, "Annales de Gynécologie," xxxiv., 1890.

cystitis only occurs after long retention. Its commonest cause in women is retroversion of the gravid uterus; next to that, retention after labour. Exfoliative cystitis does not begin to get well until the exfoliated piece has been got rid of, which happens, if the case be let alone, by its expulsion through the urethra. In cystitis from microbes, the tendency is to recovery: the leucocytes vanquish and eat the microbes. Cystitis from new growths or foreign bodies lasts until its cause has been removed.

The treatment of cystitis in the female.—Cystitis is more easily cured in the female than in the male, because the female bladder can be so easily emptied and drained. The first thing is, if possible, to remove the cause of the cystitis. Never try to remove a foreign body or growth in the female bladder through the urethra. Such attempts bring with them danger of subsequent incontinence of urine. To remove anything from the bladder open it through the vagina by an incision in the middle line. By such an incision you can get as much room as you want. If the cystitis is severe do not sew up the incision, for drainage of the bladder through the opening will be the best possible thing to cure cystitis. The wound will often heal in two or three weeks, and if not it will contract to the size of a pinhole, and can then be closed easily.

When the cause has been removed, the treatment of cystitis in the female is the same as in the male. There are drugs supposed to have a specific influence on the bladder, viz., buchu, uva ursi, pareira, triticum repens. These do no harm, and therefore may be given: but they are far inferior in effect to local treatment. Let the bladder be washed out night and morning with a non-irritating antiseptic, the best being a saturated solution of boric acid. Let it be done by means of a funnel connected by indiarubber tubing with a double-channelled catheter. With this arrangement the force of the stream depends upon the height to which the funnel is raised. It should not enter with force enough to cause pain. If this be used while cystitis is still recent it will quickly cure it. If the cystitis be of long standing, and this treatment is not effective, or if there be much pain, drain the bladder, so that it may have perfect rest. Treat the case in the way I have described in speaking of fissure of the vesical neck.

CHAPTER LI.

RETENTION OF URINE.

In this chapter I have little more to do than to mention the causes of retention of urine in women; for the conditions which cause it are most of them described in other parts of this work.

Hysterical retention.—In any case of retention of urine, the first thing to do is to pass a catheter. There are cases in which this is unnecessary; for sometimes retention of urine occurs in young girls who have no disease of or near the urinary organs. This is called *hysterical retention.* I have said more about it in Chapter III. Until you have examined the pelvic organs and the contents of the bladder you cannot be sure that the case is one in which the catheter had better not be used.

Lack of expelling power. — *Over-distension* of the bladder may so weaken its wall by stretching, that it does not contract, and hence urine is retained. *After labour,* the patient is sometimes unable to pass water while she is lying down, because the abdominal walls have been so weakened by over-stretching during pregnancy that the pressure within the belly is not enough to expel the urine. When the patient sits up in bed she can pass water. This is one of the causes of retention in childbed. This is the proper place to mention that retention may be the result of *nervous disease.* In tabes dorsalis and in insular sclerosis, slowness and difficulty in emptying the bladder, and occasionally retention, are sometimes early symptoms. Retention is common in paraplegia.

Retro-uterine swellings.—When after drawing off the urine you examine by the vagina, you may find a swelling behind the uterus, driving the cervix forward and compressing the urethra. These swellings may be—

1. The body of a retroverted gravid uterus.
2. A fibroid: either (*a*) a growth from the back of the

uterus, the cervix and uterine cavity being pushed forwards; or (*b*) a growth in the uterine wall retroverting or retroflexing the uterus.

3. An ovarian tumour.
4. Serous perimetritis.
5. Retro-uterine hæmatocele.
6. An abscess.
7. A malignant growth.
8. An extra-uterine gestation sac.
9. Hydatid cyst.

The first three of these fix the uterus by their size; by so jamming the uterus forwards that there is not room for it to move. The lessening of mobility is in proportion to the pushing forwards of the uterus. If the swelling behind is small, the uterus is not absolutely fixed, although it does not move so freely as it should. In the remaining conditions, the uterus is fixed by adhesions as well as by displacement.

Retroversion of the uterus—whether with pregnancy or with a fibroid—differs from all the other conditions mentioned in this, that the body of the uterus is not to be felt in its normal situation.

When the uterus is pushed forwards by a swelling behind it, it is pushed nearer the abdominal wall. It is also usually pushed upwards, because (1) by its forward movement the space for the bladder in the pelvis is diminished, and therefore the bladder when full rises up behind the anterior abdominal wall and pulls the uterus up with it; and (2) the uterus is often adherent to the bowels forming the upper boundary of the cavity containing the effusion, and these adhesions pull the uterus up. Being pushed forwards and upwards, the uterus can be easily felt by bimanual examination. This therefore is the sign by which retroversion of the uterus is to be distinguished from a swelling behind the uterus pushing it forwards. If you feel doubtful whether what you feel bimanually is the uterus or not, pass the sound. If the uterus is pressed forwards and upwards, the sound (which, in examining such a case, should be made less bent than usual) will pass two and a half inches or more in the upward direction.

If you feel immediately behind the symphysis pubis and anterior abdominal wall a body having the shape, hardness, and size of the uterus, moved by an impulse imparted to the cervix, and when moved moving the cervix, and into which the sound passes, it is certain that the swelling behind is not a retroverted uterus.

The cases in which it is difficult by bimanual examination to make out a uterus displaced forwards by a tumour behind it are cases of ovarian tumours in which the uterus is adherent, and is dragged upon so as to elongate it, and cases of extra-uterine gestation in which the uterus is enlarged, elongated, and blended by adhesions with the solid wall of the cyst behind it. In these cases the passage of the sound will show the direction and length of the uterine cavity.

In retroversion of the gravid uterus, when you examine bimanually, after the bladder has been emptied, with the finger on the cervix, you will find that between your finger on the cervix and the hand on the abdomen there is only the cervix, not the body of the uterus.

Importance of retroversion of the gravid uterus.—A full description of the clinical history of retroversion of the gravid uterus is out of place in a work which does not treat of the diseases of pregnancy. Here I will only say that it is the most common and therefore the most important cause of retention of urine in women. If left unrelieved it has little tendency to spontaneous cure, and is likely to prove fatal, by (*a*) cystitis spreading up the ureters to the renal pelvis, and so causing pyelitis, uræmia, and death. Pyelitis thus brought about may prove fatal long after the retention which caused it has been relieved. (*b*) Or by cystitis spreading through the bladder wall to the peritoneum or to the cellular tissue. (*c*) Or by cystitis so severe as to kill part of the bladder wall; thus by the separation of a slough the bladder is perforated, or so thinned that it gives way to pressure, and urine escapes into the peritoneum or cellular tissue according to the site of the perforation.

Sources of error in the diagnosis.—Distension of the bladder by retention causes great pain and great swelling of the belly. The latter often misleads, for although the patient's history suggests that she is in the fourth month of pregnancy

she knows, and her doctor sees, that her belly is much bigger than that early stage of pregnancy would account for; and hence the history is not duly taken into account. When the retention has lasted a few days, the tension within the bladder becomes so great that the resistance of the blocked urethra is partly overcome, and the urine trickles away through it in drops. If the patient has not sought advice, or not mentioned her urinary trouble before, she will now tell you, not that she cannot pass water, but that she cannot retain it. Hence always remember that a complaint of incontinence of urine may indicate retention.

Retroversion of a fibroid.—A fibroid, if it be the size of a uterus in the fourth month of pregnancy, may retrovert the uterus, become incarcerated, and cause retention of urine just like a pregnant uterus. This is rare: for fibroids of just the size to get into the hollow of the sacrum and there get incarcerated are not common. Distinguish such a fibroid from a pregnant uterus by the greater hardness of the fibroid, the deeper colour of the vulval mucous membrane in pregnancy, the softening and swelling of the cervix in pregnancy. With a fibroid the colour of the mucous membrane is that of the buccal mucous membrane; and the cervix uteri is small and hard. The history is less important, but may help. It is of amenorrhœa and the other symptoms of pregnancy in that condition; but probably of bleeding with a fibroid.

In retention due to retroversion and incarceration of a uterus enlarged by pregnancy or a fibroid, the treatment is, *first*, to draw off the urine, and *then* to push up the displaced uterus. Push towards one side, so that you may evade the sacral promontory.

Retro-uterine tumours.—A retro-uterine tumour causing retention may be an ovarian or a fibroid pushing the uterus forward so as to compress the urethra and cause retention. Such a tumour may have been at one time above the pelvis, but have been suddenly pushed down during some effort, and have then got incarcerated under the sacral promontory. Or it may have been slowly growing in the pelvis, causing no trouble until it got so large that some increased congestion within the pelvis—as, for instance, from fatigue—led to swelling of the tumour, the uterus, or the urethra, or all of

them, sufficient to cause retention. If so, a few days' rest in bed after the urine has been drawn off will prevent recurrence of the retention. In either case the treatment is, first, to draw off the urine, and then carefully to examine the parts. I describe in other chapters the diagnosis and treatment of such tumours.

The lump pushing the uterus forward may be a collection of blood, pus, or serum. The blood may be in Douglas's

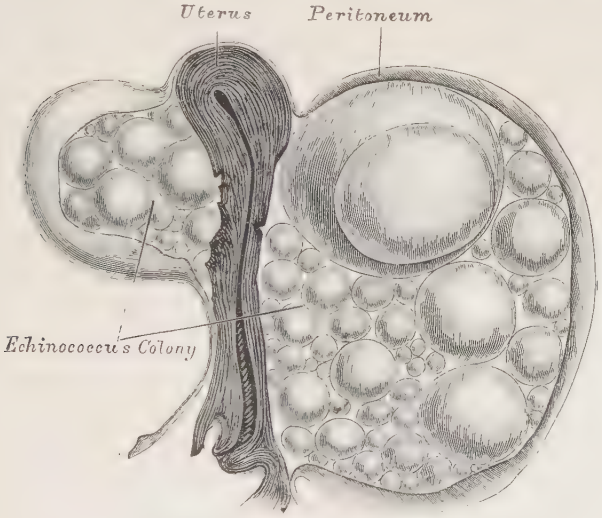


Fig. 189.—Retro-uterine hydatid. (*After Bland-Sutton.*)

pouch or in the cellular tissue. I have described the causes, symptoms, and signs of such blood effusion in Chapter XX. Pus may be in the Fallopian tube, in an ovarian cyst, or in the peritoneum. Information as to such pelvic suppuration will be found in Chapters XVI. and XVII. The swelling may be serous exudation; a form of perimetritis that I have described in Chapter XV. A swelling behind the uterus may be an ectopic pregnancy; this I shall describe in a later chapter.

Hydatid cysts.—A retro-uterine tumour causing retention may be a hydatid cyst* (Fig. 189). Such tumours are rare

* *See* a case by the author, *Lancet*, Nov. 21, 1896. For an account of hydatids in the peritoneum generally, *see* Fenwick, on "Obscure Diseases of the Abdomen."

in women, commoner in men. The cyst may be single, but they are oftener multiple. They cause no symptoms except by their size, unless they suppurate. A hydatid cyst causing retention of urine will be underneath the peritoneum. I know not how it is to be distinguished from other cysts that occur in this situation until it has been opened and the characteristic fluid and lining membrane let out.

Blocking of the urethra.—Disease of the urethro-vaginal septum may block the urethra. Cancer may begin here, though it rarely does; or it may extend down the urethro-vaginal septum from the uterus, and block the urethra so that the patient cannot pass water. The passage of a catheter causes such pain that the patient will welcome the creation of a vesico-vaginal fistula, deeming it a less evil to be constantly wet than occasionally to have the catheter passed. The best treatment of such retention is to make a fistula by cutting in the middle line from the vagina into the bladder. If this is not done, the breaking down of the cancer will in time make a fistula, after causing great suffering to the patient. Retention from an abscess in the urethro-vaginal septum will be ended by the bursting or opening of the abscess. I have known ulcerated surfaces of esthiomène at the meatus adhere, and close the meatus urinarius, so that there was retention of urine, and the urethra was dilated into a sausage-shaped fluctuating swelling.*

Spasmodic Retention.—One of the commonest kinds of retention in men is what is often called "spasmodic stricture." The latter word is incorrectly used, because there is no stricture. There is no resistance to the passage of a large catheter, but the outflow of urine is prevented by spasm of the urethra. Such spasmodic retention without disease of bladder or urethra is rare in women, but sometimes occurs. Retention may occur from any disease which makes micturition painful, such as urethral caruncle, stone, fissure of the vesical neck, vesical polypus. It is conceivable, but a most rare occurrence if it ever happens, that a stone or a polyp might mechanically block the urethra. The retention associated with these conditions is partly nervous, the pain which micturition causes making the patient involuntarily and unconsciously

* I have reported the case in "Obst. Trans.," vol. xxviii.

afraid to pass water, and partly from spasm and swelling of the urethra. Cantharides and turpentine are said to be able to cause retention by producing congestion of the bladder and urethra.

Other alleged causes.—According to Edis, fæces, tumours of the rectum, prolapse, recent inversion of the uterus, hæmatometra or hæmatocolpos, may cause retention of urine; but I have never seen it from these causes.

CHAPTER LII.

INCONTINENCE OF URINE.

This means that the patient cannot retain any urine: that as fast as it flows from the ureter into the bladder it escapes externally. This comes from an opening in the bladder wall. Such openings are the result (*a*) of damage during labour or operations, or by some accident; (*b*) or of sloughing from inflammation; (*c*) or of the breaking down of malignant disease; (*d*) or of congenital malformation. Labour is the most common cause.

Vaginal fistulæ.—Vaginal fistulæ are among the most distressing consequences of mismanaged labour. There are three ways in which such fistulæ may be formed. (1) By *tearing*. Tears in the vagina may be so deep and extensive as to open the bladder or the rectum; and then, if healing be imperfect, a fistula is left. This is the usual way in which recto-vaginal fistula is formed; but it is a rare mode of production of vesical fistulæ. (2) By *perforation*. That is, by a sharp instrument or point of bone being thrust through the vagina into the bladder or rectum. This is a rare mode of origin for fistulæ of any kind. Fistulæ, formed either by tearing or perforation, have this feature in common, that the symptoms they cause appear immediately after delivery. (3) By *sloughing*. Nineteen out of twenty vesical fistulæ are produced in this way. When so produced, symptoms do not appear immediately after delivery, but are postponed till after the separation of the slough. The sloughing comes from continuous compression of soft tissues between the fœtal head and the pelvic bones. Such compression takes place when the membranes have ruptured, the amniotic fluid has drained away, the uterus has passed into a state of tonic contraction, and there is such disproportion between the fœtal head and the pelvic brim or cavity, that the head cannot enter the one or pass through the other. If the head cannot enter the brim, then the uterine force is exerted in

compressing the soft parts nipped between the head and the most prominent points of the pelvic brim. In the common kind of contracted pelvis, the prominent points are the sacral promontory and the pubic symphysis; and therefore the pressure effects are greatest opposite these points. If the pressure is so great as to kill the tissues nipped, they slough. This sloughing is produced not by the magnitude of the pressure, but by its long continuance without intermission. The after-effects of the sloughing depend upon the situation of the damage.

Crushing of tissues opposite sacral promontory.—The vaginal wall or the cervix uteri may slough where they have been compressed between the head and the sacral promontory; and such sloughing may open the pouch of Douglas. If the parts are preserved from septic infection, the slough is separated, and Douglas's pouch is closed by adhesive inflammation. Such adhesions may alter the position of the uterus; and some think that such change in the position of the uterus produces ulterior effects. Information upon this point will be found in Chapters XI. and XVII.

Crushing of tissues opposite the symphysis pubis.—Sloughing in this situation is more important than in any other, because here it destroys the integrity of the urinary passages. The tissues which suffer most are those nearest the head, that is, the posterior wall of the urinary canal, and therefore the result of such sloughing is incontinence of urine.

Situations of urinary fistulæ.—The place at which the sloughing takes place depends upon the extent to which the os uteri had been dilated and pulled up over the head at the time pressure became continuous. Sometimes, although very rarely, the membranes rupture early, and the os uteri dilates slowly, so that the amniotic fluid has drained off and pressure become continuous before the bladder has been pulled up out of the pelvis. In that case the slough may involve the cervix uteri and the ureter, a *uretero-cervical fistula* being formed (often spoken of as "*uretero-uterine*" fistula); but the sloughing affects the cervix, not the body of the uterus. One or both ureters may in consequence of sloughing come to open into the fistula. It must be admitted as possible that the tissues killed by pressure

may comprise the ureters, but not the bladder. But the most probable explanation of such cases is that the slough involved cervix, ureters, and bladder wall; and that while the urine was flowing away through the cervix, the gap in the bladder healed by granulation. No uretero-cervical fistula has yet been dissected after death. If there is a persistent hole in the bladder, as well as the destruction of part of the ureters and cervix, the condition is called *vesico-cervical* (or incorrectly, *vesico-uterine*) fistula. The destruction

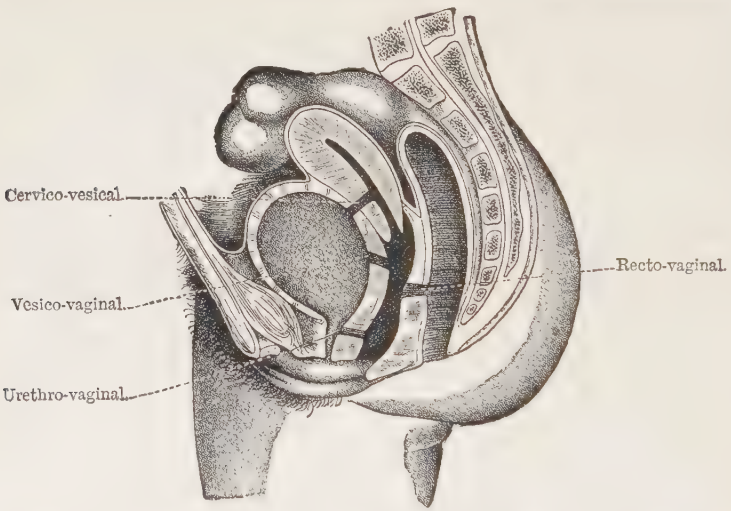


Fig. 190.—Diagram illustrating the different kinds of fistula. (*After Sinety.*)

of tissue may involve a large part of the cervix uteri and the vagina, and this is called *vesico-cervico-vaginal* (or *vesico-utero-vaginal*) fistula. But fistulæ involving the cervix uteri are rare; according to Neugebauer,* they form about 8 per cent. of the vesical fistulæ which follow delivery; and fistulæ involving the ureter are still rarer. They are rare, because pressure during delivery seldom becomes continuous until after the cervix uteri has been pulled up out of the pelvic cavity. When, at this later stage of the labour, pressure becomes continuous, the bladder wall is killed at the part where it is in relation with the vagina, and a *vesico-vaginal fistula* is the injury which results. (Fig. 190.)

* "Arch. für Gyn.," Bd. xxxiv.

It is possible that during labour the relations of parts may alter or be altered by interference, so that after part of the cervix, ureters, and bladder have been so compressed as to kill the tissues, the cervix may be pulled up, and continuous pressure come to be exerted on the bladder; so that two fistulæ, a vesico-cervical and cervico-vaginal, are formed. But the more probable explanation of the coexistence of two fistulæ is that the sloughing at first produced one large gap, but that across this gap a bridge of tissue subsequently united. Cervical fistulæ are, according to Neugebauer,* more common in multiparæ than in primiparæ.

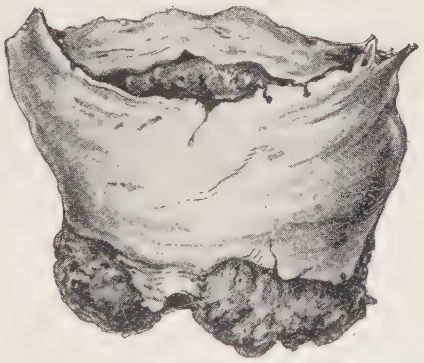


Fig. 191.—Slough of cervix uteri, upper part of vagina, and base of bladder. (*From a specimen in the London Hospital Museum, drawn by Dr. J. H. Sequeira.*)

Annular sloughing.—In cases in which the pelvis is contracted in all its dimensions, or is normal in shape and size, but the child's head is too large, the head may enter the pelvic cavity, but become impacted there; that is, stuck fast, unable either to advance or to recede. If this happen, a ring of soft tissue will be crushed all round where the head is in contact with the pelvis. If the impaction take place before the dilatation of the os uteri is complete, the cervix uteri may have its vascular supply cut off by the crushing of a ring of tissue above it, and consequently slough. This sloughing may affect only a ring of cervical tissue. If so limited, the ill effects do not outlast the puerperium. But the killing of tissue by pressure may affect more than the cervix; it may involve also the upper part of the vagina and the base of the bladder. When healing has taken place, as much as it will after separation of such a slough, the vagina is found converted into a short funnel ending in scar tissue bounding a small hole not large enough to admit

* Op. cit.

the finger. I have recorded a case in which such sloughing * took place in a woman who was not pregnant. I was not in that case able to find out its cause. The slough is preserved † (Fig. 191). I have seen a case in which sloughing took place after delivery, and the resulting condition was exactly the same as in the case above referred to; and therefore I doubt not that the same parts were involved. Guéniol‡ has recorded a similar case.

Symptoms.—The symptom that a vesical fistula causes, wherever it be situated and whatever its size, is incontinence of urine—that is, the patient's urine continually runs away through the vagina. The only exception to this is that when the fistula is small the pressure of the vaginal wall against it will sometimes, if the patient is recumbent, temporarily close, and retain a little urine in, the bladder. Hence these patients sometimes say that they can for a time retain the urine while lying down. The presence of a fistula is suggested, and may almost be affirmed before examination, from the urinous smell of the patient's clothing. Incontinence of urine is not the same thing as irritation of the bladder—that is, frequent micturition, although in both the patient may describe her trouble as inability to retain urine. When there is merely irritation the patient can generally empty the bladder often enough to prevent her clothing from being more than occasionally wetted; but when there is incontinence this is impossible, and unless provision is made against it the clothes become saturated.

History.—When a fistula has been formed in the usual way – that is, by sloughing of the parts from pressure, there is no incontinence until the slough has at some part separated. Hence the history will be that the patient had a long labour but no incontinence of urine till from five to ten days afterwards (which is the usual time for the separation of the slough), or even later, and that then the urine began to run away involuntarily. If the fistula was produced by tearing or by perforation, the incontinence of urine will date from delivery.

Diagnosis.—This can only be made by physical examination. Put the patient on her side, and expose the cervix and

* "Obst. Trans.," vol. xxix. † London Hospital Museum, 2123.

‡ "Nouvelles Archives d'Obstetrique et de Gynécologie," 1886, p. 127.

vagina with a duckbill speculum. If there be a vaginal fistula the opening will be seen. Cervical fistulæ are generally small; a cervical fistula big enough to admit the finger is exceptional. Vaginal fistulæ are often large; and then the mucous membrane of the opposite vesical wall often bulges through the fistula, forming a rugous swelling of deeper red and more velvety feel than the vaginal wall.

If when the cervix and vagina are exposed the fistula cannot be seen, and yet there is no doubt that urine continually escapes by the vagina, put a catheter in the urethra and inject milk into the bladder. If there be a very small vaginal fistula, the white jet of milk escaping through it will be easily seen and will mark it out. If a cervical fistula, the milk will come back through the cervix uteri. If the fistula be uretero-cervical on one side, the history will be that the urine flows continually away by the vagina, while yet some urine is passed naturally; and when milk is injected into the bladder none flows into the vagina. A cervical fistula involving both ureters would be characterised by flow of all urine through the vagina, while examination by injection of milk shows no passage from the bladder to the vagina.

Usual concomitants.—With a fistulous opening into the bladder there is generally cystitis, so that the urine is ammoniacal and ropy. Injury so severe as to cause sloughing of the bladder wall often leads to sloughing at other parts of the genital canal and to pelvic inflammation; and hence there is often fixation of the parts by parametric exudation and contraction of the vagina by scar tissue. The irritation of the urine causes inflammation of the skin of the labia and thighs; and the mucous membrane and skin are often encrusted with earthy salts.

Relation to operative delivery.—When inquiry is made as to the labour after which a fistula has formed, it is in most cases found that some abnormal condition was present, and in many that operative delivery was required. Complications are frequent, because such disproportion as leads to continuous pressure also leads to disturbance of the mechanism of labour. There is no special complication other than disproportion which produces sloughing and its consequence, fistula. The public are apt to think that the fistula was produced by the

operative delivery; and it is true in a few cases. I have known vesico-vaginal fistula produced by the *accouchement forcé* in placenta prævia. In the great majority of cases, those in which the fistula is produced by sloughing, the fault has been not that natural delivery has been interfered with, but that operative delivery has been put off too long. It is hardly necessary to point out that delay in giving aid is not always the fault of the medical attendant.

Other causes of fistula.—These need not detain us long. A fistula is sometimes intentionally made, for reasons stated in Chapter XLIX. In hysterectomy, or amputation of the cervix for cancer, the bladder or ureter is sometimes wounded. The cases in which this is most likely to happen are those in which uterine mobility is limited, but it is not certain that this is from extension of cancer, and the operator gives the patient the benefit of the doubt, and removes the disease. I have referred to perforation of the bladder by cancer in the chapters treating of that disease. The congenital malformations which cause incontinence of urine are hypospadias, in which there is no urethra, the bladder opening directly into the vagina, and extroversion of the bladder, in which the two halves of the body have not united in the lower abdominal region; so that the front wall of the bladder is absent—a rare deformity, especially in women, and one often associated with other malformations.*

Treatment.—The *curative* treatment of a urinary fistula is its closure by a plastic operation.

The *palliative* treatment consists in the constant use of some appliance to receive the urine. While the patient is about, the choice lies between a urinal and frequently changed absorbent pads. The latter is the less disagreeable. Wood wool is the best absorbent material. The pads must be thicker than is required for the menstrual discharge, and must be changed often. If the patient is so situated that she must go for hours without the opportunity of changing the pads, she must wear a urinal. This appliance consists essentially of a trough to receive the urine, whence it is conducted by a narrow tube to a bag in which it is contained. There are

* For a full account of it, *see* Champneys, "St. Barth's. Hosp. Rep.," vol. xiii.

practically only two kinds: one in which the trough is made rigid (Fig. 192), so that it keeps its shape, but its pressure may be irksome; the other (known as the French model) (Fig. 193) in which the trough is made of thin flexible

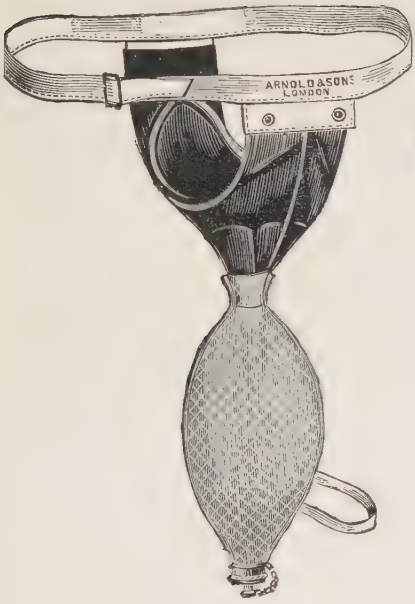


Fig. 192.—Female urinal.

Fig. 193.—Female urinal (French model).

indiarubber. The latter is the less uncomfortable. At night discomfort is reduced to a minimum if the patient sleeps on what is known as a "fracture bed" (*i.e.* one with an opening in the middle for a pan), and is provided with plenty of absorbent material.

It is best to postpone operation until at least two months after delivery, for two reasons. First, the parts are less vascular and the tissues firmer after involution is complete, changes both of them conducive to success in the operation. Second, a vesical fistula, either cervical or vaginal, may spontaneously close. This is more likely to happen in the case of a cervical fistula, because such fistulæ are small; but I have known a vaginal fistula, big enough to admit several fingers, close without operation.

OPERATIONS FOR VESICAL FISTULA.

The closure of a vesico-vaginal fistula varies infinitely in difficulty, according to the size of the hole and the way in which it was made. A fistula made by a cut or tear—as, for instance, in vaginal lithotomy—or by a sharp edge of bone in delivery after craniotomy, will, if left for some weeks, contract till it is no bigger than a pin-hole. Such a fistula can easily be closed. But if the fistula has been made by the separation of a large slough, the opening will be large and irregular; and if, as often happens after such injuries to the genital canal, there has been pelvic cellulitis, the border of the fistula may be fixed by organised inflammatory exudation. In such cases the task of closing the fistula will tax to the utmost the ingenuity and dexterity of the surgeon. No two fistulæ produced in this way are alike. Experience of many such operations greatly helps the surgeon. These bad fistulæ are not common in thickly populated countries well provided with doctors, because in them women can easily get proper treatment in childbirth. They are more frequent where doctors are scarce, so that women with obstructed labour go on long without help. Therefore surgeons within reach of such places get more experience in these operations than those who practise in centres of civilisation. Thus Marion Sims, in Alabama, got cases occurring in the backwoods of America; and Milton, of Cairo, abundance of cases from the fellaheen of Egypt. I base my account of our resources in cases of extreme difficulty upon the recommendations of Mr. Milton.* I first describe the easy operation of curing a fistula the result of a wound, not of sloughing.

Closure of a fistula without loss of substance.—Put the patient in the lithotomy position. Expose the fistula

Fig. 194.—Needle for closing small vesico-vaginal fistula.

with a duckbill speculum. Grasp the margin of the fistula with toothed forceps, and with a fine tenotomy knife pare

* "St. Thomas's Hospital Reports, N.S.," vol. xvii., 1887.

away a strip of mucous membrane about $\frac{1}{3}$ in. in breadth all round the fistula. Remove it, if possible, in one piece, because thus you can best make sure that you have left no particle of mucous membrane behind. Take a needle like the one figured (Fig. 194), threaded with No. 1 silver wire; enter its point in the mucous membrane close to and in front of the raw surface opposite the fistula. Let its point emerge through the raw surface at the edge of the fistula. Enter it again through the raw surface at the opposite edge of the fistula, and bring it out through the mucous membrane close to and behind the raw surface. Lift the wire out of the needle with a hook, and withdraw the needle. Put in a stitch on each side of this, about $\frac{1}{4}$ in. from it. Enter the needle through the mucous membrane close to and in front of the raw surface; pass it underneath the raw surface, and bring it out through the mucous membrane close to and behind the raw surface (Fig. 195). This done, clean the raw surface from adherent clot, and draw together and fasten the sutures with Aveling's coil and shot. Pass the ends of the wires through the coil and shot; hold the shot with pressure forceps, and press it home. Then compress the shot, and the

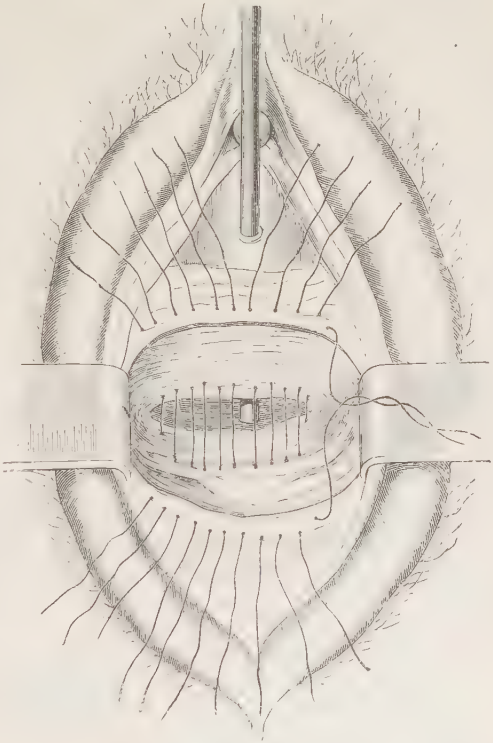


Fig. 195.—Mode of stitching in closure of a small vesico-vaginal fistula. (*After Simon.*)

suture is secure. Inject milk into the bladder to see that the closure is complete. Let the patient empty the bladder naturally every six hours; let a catheter be passed only if she cannot do this. In a week remove the coil and shot by cutting through the coil at its junction with the shot. Take out the stitches at the end of a fortnight.

Fistulæ with loss of substance.—Here you have, instead of a pin-hole, a large irregular gap. First seize different parts of the margin of the opening, and see if, and how best, you

Fig. 196.—Milton's knife for vesico-vaginal fistula.

can bring its opposite borders into apposition with one another. If the fistula is of such size and shape, and its margins are so movable that you can get its opposite borders into apposition, the operation, though tedious and perhaps difficult, is simple. For the easy operation I have just described an ordinary tenotomy knife and an oculist's conjunctiva forceps are sufficient tools. But when you have to deal with a large gap bounded by an irregular margin, you

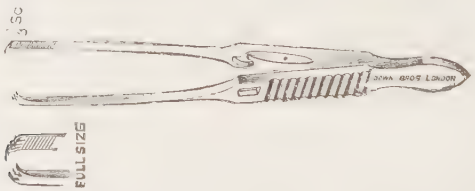


Fig. 197.—Milton's toothed forceps for vesico-vaginal fistula.

may be unable to pare the edges properly and pass the sutures without special instruments for the purpose. The illustrations show those used by Milton. The round edge of the knife is sharp, and the cutting edge extends for a quarter of an inch along the back (Fig. 196). The centre of gravity is exactly at the junction of the handle with the shaft. The centre of gravity of the forceps corresponds to the centre of

the button of the catch when closed (Fig. 197). There is a slot at the head of the needle as shown in Fig. 198. Without this slot the wire tends to slip round the head of the needle and stand off at an angle, thus hindering its passage, and tearing the tissues as it passes. The needles are stout and triangular in section

Fig. 198.—Needle.

Pare off a strip of mucous membrane about a third of an inch wide all round the margin of the fistula. Then, with needles of suitable curve (the choice of needle depends on how and where your stitch is to go), enter stitches through the mucous membrane close to the raw surface, bringing them out through the raw surface close to the edge of the fistula; entering them again through the opposite raw surface, and bringing them out through the mucous membrane close to the raw surface. Take care that the stitches pass through the mucous membrane so close to the raw surface that no mucous membrane is tucked in between the raw surfaces; for if mucous membrane is so tucked in union will not take place. If you pass the stitches not through the mucous membrane, but only through the raw surface, they are likely to cut their way through the denuded tissue, which is weak. If the margins of the fistula are so situated that you cannot make one needle traverse both raw surfaces, use needles threaded with silk, and leave a loop of silk projecting towards the opening of the fistula; the wire can be hitched round this, and thus drawn into position. Sponge clean the raw surface, then draw the sutures tight, and secure them with Aveling's coil and shot, as above described.

How to deal with contractions of the vagina.—One source of difficulty in operations for vesico-vaginal fistula is contraction of the vagina by scar tissue below the fistula, so that the fistula cannot well be got at. If so, the contracted vagina must be either dilated or divided. Bozeman used large dilators, passing one size after another, and leaving each in for many hours—a slow and painful process. Milton divides the bands ten days before the operation, and then dilates. The simplest way is to divide them freely at the time of operation, cutting with a scalpel in the direction of the tubera ischii on one or both sides, as may be needed.

"Glissement," or displacement of vagina.—The margins of the fistula may be so fixed by organised inflammatory exudation that you cannot bring them into contact. In some cases you can effect this by a method introduced by Jobert, and called by him "*glissement.*" It consists in opening up the vesico-uterine cellular tissue by making a transverse incision in front of the cervix uteri, and breaking down the cellular tissue with the fingers, so as to free the vagina from the uterus, and make the upper part of the anterior vaginal wall more movable. In this way you may sometimes bring into apposition the margins of a fistula which before could not be made to approach one another.

If there be great loss of substance, it may be impossible to make the margins of the fistula come together. In that case the choice lies between two measures—transplantation, and colpocleisis, or closure of the vagina.

Transplantation; that is, the replacement of the lost base of the bladder by skin.—I take from Milton's account the method of doing it. The nearest place from which skin can be got is the labia. Detach the labia from the tissue beneath, so as to make flaps measuring six inches by one inch, attached at each end. These are left (kept apart from the tissues of their original bed) for three weeks, in order that the lost vascular supply from below may be replaced by a collateral circulation through them from the vessels entering them at their ends. At the end of this time the front of the cervix uteri is pared. The upper end of each skin flap is divided and turned into the vagina. It is then stitched to the raw surface of the cervix, the skin surface of the flap being towards the vagina, and the adjacent edges of the two flaps are also for a little way stitched together. The stitches are removed at the end of three weeks. After the fortieth day the posterior attachments of the skin flaps are gradually divided, a little bit being cut through each day, so that the divided vessels may gradually have their place taken by enlargement of collateral vessels. When at length the division is complete, there is a flap of skin in the vagina, hanging to, and receiving its vascular supply from, the cervix uteri. The next thing is to pare the edges of the fistula, and sew this flap of skin to them. When the sutures are taken out, there may be small

gaps where union is not quite perfect, but these, if left for some weeks, will gradually diminish in size, or quite close.

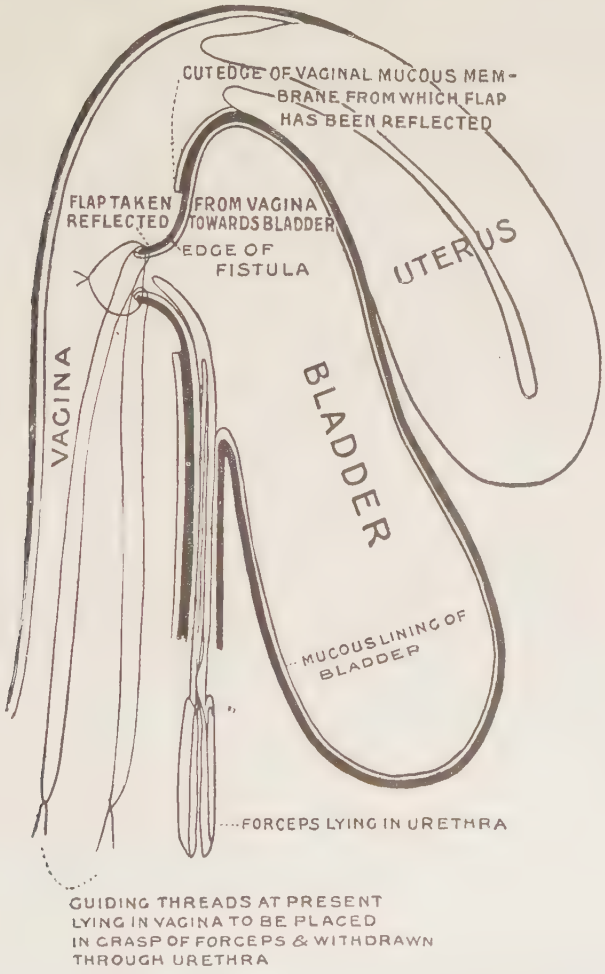

CUT EDGE OF VAGINAL MUCOUS MEMBRANE FROM WHICH FLAP HAS BEEN REFLECTED
FLAP TAKEN FROM VAGINA REFLECTED TOWARDS BLADDER
EDGE OF FISTULA
UTERUS
VAGINA
BLADDER
MUCOUS LINING OF BLADDER
FORCEPS LYING IN URETHRA
GUIDING THREADS AT PRESENT LYING IN VAGINA TO BE PLACED IN GRASP OF FORCEPS & WITHDRAWN THROUGH URETHRA

Fig. 199.—Stanmore Bishop's operation for vesico-vaginal fistula. Mucous membrane of vagina separated; temporary sutures put in; forceps in urethra to seize them.

If, when no further contraction can be expected, small holes still remain, they can be closed by paring and stitching their edges. The hairs on the skin, when it is thus turned into the vagina, disappear.

This method of closure is difficult, protracted, and painful, but I believe, if properly done, cures the patient. I have never done it, nor seen it done.

Fig 200.—Enlarged diagram of sutures in Fig. 199.

Colpocleisis (κόλπος, the vagina; κλεῖσις, a shutting up).—If all attempts at repairing the vesico-vaginal septum fail, or if this seems impossible, as when there has been sloughing of the whole upper part of the vagina and the cervix uteri, so that the vagina has become a funnel leading

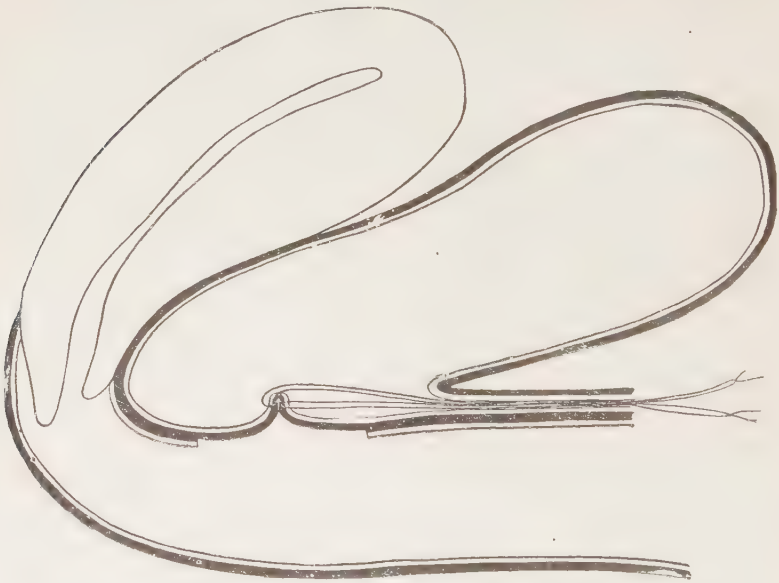


Fig. 201.—Stanmore Bishop's operation for vesico-vaginal fistula. Temporary sutures drawn in through urethra.

to a hole not big enough to admit the finger, the only resource left is to close the vagina, so that the patient may menstruate into the cavity which contains the urine. This is a simple operation. The objection to it is that it unfits the patient for married life, and that the pouch in which the urine is contained is not like the bladder, a bag which can be emptied, but a space which is never quite emptied, in which there is always some residual urine, and in which, therefore,

decomposition of urine and formation of a phosphatic calculus are likely to take place. I know not whether in all such cases a calculus forms, nor know I whether by diligent washing out of such a cavity the formation of a calculus might be prevented. From these two drawbacks it follows that colpocleisis, although it stops the constant dribbling of urine, is yet not a satisfactory cure of vesico-vaginal fistula.

Method of operation.—Colpocleisis is an easy operation. Pare away with a tenotomy knife a strip of mucous membrane at least half an inch in breadth all round the vagina. The broader the raw surface, the surer you will be of getting union. Then put in stitches so as to bring the raw surfaces of the anterior and posterior walls into contact. The easiest way of putting in these stitches is with a needle provided with a notch instead of an eye. Enter the needle through the mucous membrane close to the edge of the raw surface. Bring it out through the raw surface close to its further border. Slip the wire into the notch, and withdraw the needle. If you have not such a needle, use an ordinary needle in a handle, threaded with silk. When you have passed the needle, hook up the silk loop and withdraw the needle. Hitch the wire round the loop of silk, and with this pull it through. Put in as many stitches as are required, about a quarter of an inch apart. Pull them tight, and secure them with Aveling's coil and shot. Remove the coil at the end of a week; the stitches at the end of a fortnight.

Fig. 202.—Enlarged diagram of stitches in Fig. 201.

Vesico-cervical fistula.—Vesico-vaginal fistulæ, involving also the cervix uteri, should be dealt with by the methods described in the foregoing paragraphs. A fistulous opening between the cervix uteri and the bladder, not involving the vagina, must be a small one. It is best dealt with by a method described by Champneys.* Pull down the cervix with a volsella. Cut through the vagina in front of the cervix for about an inch and a half transversely, thus opening

* "Obst. Trans.," vol. xxx.

the cervico-vesical cellular tissue. With the fingers or a blunt instrument separate the bladder from the uterus, using the scissors where scar tissue is too firm to be torn, until you have got above the fistula. The hole in the bladder and that in the cervix will be visible. As the tissues are raw, no paring is required. Stitch the margins of the vesical fistula together, turning the mucous surface inwards, as described in the foregoing paragraphs. Let the hole in the cervix alone.

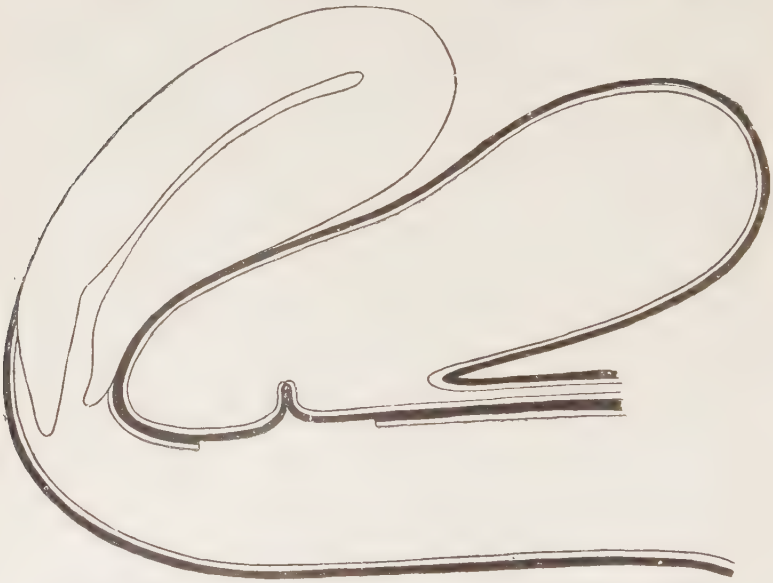


Fig. 203.—Stanmore Bishop's operation for vesico-vaginal fistula. Stitching complete and temporary sutures withdrawn.

Other methods of operation.—Mr. Stanmore Bishop* has devised an ingenious method of closing vesico-vaginal fistula. He dissects up the mucous membrane of the vagina round the fistula up to, but not through, the borders of the fistula. The dissected up mucous membrane is then turned, as upon a hinge, so as to present its mucous surface to the action of the urine, and form the floor of the now closed bladder. Then he brings together the edges by temporary ligatures (Figs. 199, 200), which are seized by forceps

* *Lancet*, June 19th, 1897.

introduced through the urethra, and pulled into the bladder (Figs. 201, 202). Thus the raw surfaces of the stripped-off mucous membrane are brought into contact, and the operator then stitches them together (Figs. 203, 204). The temporary sutures are then withdrawn. This method has not yet, so far as I know, been practised by others.

Supra-pubic operations.—Some operators have opened the bladder above the pubes, and pared and stitched the margins of the fistula from above. This method may be useful when scar tissue so contracts the vagina that the fistula is difficult to get at from below.

Fig. 204.—Enlarged diagram of sewn part in Fig. 203.

Treatment of congenital defects.—I know not of any surgical treatment that will cure hypospadias. The pressure of a pad is here the only way to keep in urine. The treatment of extroversion of the bladder is by surgical means. But the practice of gynæcology does not assist in the choice or performance of the operation required; therefore I attempt not its description. Cases of this deformity are usually brought to a surgeon in childhood.

CHAPTER LIII.

PAINFUL DEFÆCATION.

Women often complain, among other things, of pain in defæcation, a symptom for which Robert Barnes introduced the name "*dyschezia*" (δύς, difficult; χέζω, I go to stool). (1) The cause of this pain may lie elsewhere than in the rectum. (2) The pain may be caused by morbid changes in the rectum produced or aggravated by disease of the generative organs. (3) The pain may be from disease of the rectum.

Many of the conditions which produce this symptom are not peculiar to women; therefore a full description of them is beyond the scope of this work.

(1) Consider first the conditions which may cause painful defæcation without disease of the bowel itself.

Constipation.—The common cause of painful defæcation is constipation—the passage of scybala so large and hard that they hurt the bowel, the lower end of which becomes congested and often inclined to bleed. Women are costive oftener than men. In the education of girls modesty is more impressed upon them than it is upon boys; hence with them the dislike of being seen, or some other slight consideration, will cause the visit to the closet to be postponed, and thus the costive habit arises. Pain simply from hard fæces is not severe, and does not last long after the action. The treatment of this pain is to get the bowels open daily, so that the motions may not be large and hard. The laxatives that may be given are countless. Many patients have found from experience one that suits them. If so, tell the patient not to be afraid of taking it daily. Pharmacologists say that some aperients produce subsequent constipation. When the bowels have been emptied, the patient is of course constipated until more fæces have come down into the rectum; and if the patient has a bad appetite, this may not be for a day or two. Therefore abandon no effective aperient on

this ground. An aperient to be taken regularly must be a mild one. Among the most useful are either English or Prussian compound liquorice powder, Seidlitz powders, confection of senna; German aperient waters, such as Æsculap, Friedrichshalle, Püllna, Hunjadi Janos, Franz Joseph, Rubinat; cascara lozenges or tabloids, Garrod's sulphur lozenges, pills of aloes variously combined with iron, nux vomica, belladonna, ipecacuan, etc. The following is a specimen, the formula being Sir A. Clark's:—

℞ Aloin
Ext. nucis vom.
Ferri sulphatis
Myrrhæ pulv.
Ipecac. pulv.
Saponis
āā gr. ss.

The leading chemists keep dozens of pills made up from various formulæ all closely resembling this.

Prolapse.—In patients with any form of prolapse, the straining which accompanies the expulsion of scybala increases the displacement, and aggravates the bearing-down pain which the displacement causes. The patient may mention pain while at the closet as one of her principal troubles, but as there is nothing peculiar in its kind, it being only an increase of her usual pain, few patients do mention it. The only treatment of this pain consists in supporting the prolapse, and making the motions soft, that straining may not be called for.

Retroflexion.—In this displacement, besides the increase of the bearing-down feeling caused by prolapse, there is often pain arising from the pressure of descending scybala on the fundus uteri. If this is congested and tender, the pain may be much complained of. When the uterus is turned backwards, it presses on the rectum. It has been even said that it may block up the rectum, and cause riband-like flattening of the motions. A movable uterus of normal size cannot block up the rectum so as to obstruct the passage of normal motions, but it may offer a hindrance, causing pain and straining when large hard lumps have to pass. The treatment is as in the case of prolapse. In any case in which the

uterus has to be supported by a vaginal pessary, regulation of the bowels is important, because during the effort with which hard lumps are expelled the pessary is liable to be forced out.

Prolapsed and tender ovary.—When an ovary is tender and lies low down behind the uterus, the pressure on it of scybala as they pass may cause pain. This is not severe, but a dull, aching, sickening pain, which is felt *before* the motion passes, and lasts some time—it may be half an hour or an hour afterwards. This pain is prevented by making the motions soft.

Pelvic peritonitis.—With this disease pain often accompanies the action of the bowels, more especially felt *before* the passage of the motion. The peristaltic action of the bowel pulls upon adhesions, and thus causes pain. If the motions are hard, their direct pressure on inflamed parts may hurt.

2. **Conditions which produce changes in the bowel.**—When there is a large effusion into Douglas's pouch, whether of blood, pus, or serum, it is frequent for the mucous membrane of the bowel to become *congested*, so that there is not only pain, but frequent desire to go to stool, with much straining, and passage of blood and mucus.

Swellings in Douglas's pouch may do more than this. A retroverted gravid uterus, an ectopic pregnancy, an ovarian, a fibroid, or other rarer tumours, may so press on the bowel as to *obstruct* it. Intestinal obstruction from this cause is not so common as the tumours which could produce it, because pelvic tumours capable of blocking the rectum generally also cause retention of urine, and this causes urgent symptoms long before obstruction of the bowel has caused trouble.

Effusions into the cellular tissue, either of lymph, in cellulitis (*see* p. 274), or of blood, when an extra-peritoneal hæmatocele is formed (*see* p. 318), sometimes extend round the bowel, forming a half-ring of induration round it. This becomes organised into fibrous tissue, and narrows the calibre of the bowel, so that the passage of hard fæces may be hindered, though not that of loose motions. This kind of rectal *stricture* with time becomes less marked, as the fibrous tissue gets looser. But I have known it last for years.

Disease of the rectum. Fissure.—The chief cause of

very painful defæcation is what is called "fissure of the anus." This is a small ulcer, generally situated at the posterior part of the anus, and involving both skin and mucous membrane. It is very tender, because a twig of a sensory nerve is exposed on its surface. Not every ulcer of the rectum is tender: for instance, the ulcers left after the separation of a ligatured pile, or the slitting up of a fistula, are not usually very tender. Therefore Mollière has happily spoken of "tolerable" and "intolerable" ulcers. The characteristic symptom of fissure—the intolerable ulcer—is very severe pain, so bad as to make the patient roll about, lasting from half an hour to two hours after defæcation. No other disease of the rectum produces such pain. When you examine, you may have difficulty in seeing the ulcer, because any attempt at examining the anus produces spasmodic contraction of its sphincter. The ulcer, if you can see it, looks linear, hence the term "fissure." If you try to insert the finger, contraction of the sphincter opposes its entry, and an attempt to overcome the resistance makes the patient shriek and writhe with pain. This ulcer has no tendency to heal. It is supposed that the spasmodic contraction of the sphincter prevents it from healing.

This disease, although not peculiar to women, is more common in women than in men, because women are of costive habit oftener than men, and costiveness favours fissure.

The treatment is to paralyse the sphincter ani, either by cutting or over-stretching. Anæsthetise the patient, and then (1) insert your thumbs, and pull opposite sides of the anal ring away from one another until you feel the sphincter yield; or (2) put the tips of your fingers together, and press the hand into the anus until the metacarpal joints, or your whole fist if your hand be small, have passed the sphincter ani; or (3) take a sharp-pointed bistoury, enter its point outside the lower margin of the ulcer, and bring it out above the upper border; then divide the ulcer from without inwards. Consult works on surgery for information as to the relative advantages and disadvantages of these various methods.

Spasm without fissure.—Nervous women sometimes suffer

from painful spasm of the sphincter ani without ulceration. There is pain after defæcation, but it is not so severe and does not last so long as when there is fissure, and the motions are not streaked with blood. These symptoms are worse at the menstrual period. Such spasm without disease of the rectum is rare in men. The treatment consists in the use of sedative ointments, the occasional passage of a bougie and, if other treatment fails, dilatation of the sphincter. For details consult surgical books.

Hæmorrhoids do not cause severe pain in defæcation, but rather discomfort about the anus. The patient is generally aware of their presence. The word "piles," generally supposed to be derived from *pila*, a mass, is applied to at least three different conditions: (1) redundant bits of skin outside the anus, called external piles; (2) lumps made of varicose veins, covered sometimes by mucous membrane, sometimes by skin, generally partly by mucous membrane, partly by skin; (3) strawberry-like bleeding patches on the mucous membrane of the rectum.

The lumps formed of varicose veins are more common in women who have had children than in other persons, from the pressure during pregnancy on the venous system of the lower part of the body. Varicosities of rectal veins are also favoured by conditions leading to pressure on the rectum, such as retro-uterine tumours, possibly also retroversion of the uterus. Hence Allingham advises that no attempt should be made to treat hæmorrhoids until any coexisting uterine disease has been cured. I doubt the effect of uterine disease in causing piles. I think Allingham's sound inference from practice is based on the fact that piles and uterine disease have certain symptoms in common, so that in a case in which both are present it may be difficult to say which is principally answerable for the symptoms; if the symptoms are due to the uterine condition, the cure of piles, though surgically perfect, will be therapeutically a failure.

Lumps of varicose veins about the anus cause chronic pain, or rather discomfort, nothing like so severe as that of fissure. Every now and then they get congested from being nipped by the anal sphincter, and then the pain is worse, and

they become tender. They often go with a congested condition of the rectal mucous membrane which causes slight bleeding during defæcation. A small crescent-shaped hæmorrhoid (called a sentinel pile) is often found at the posterior part of the anus, associated with fissure, the fissure being in the concavity of the crescent.

These lumps of varicose veins are often formed during pregnancy, and when present before pregnancy always get worse as pregnancy advances, getting better again during childbed. For this reason—the sure prospect of improvement after delivery—it is well not to urge the operative cure of this kind of piles during pregnancy. There is another reason, which is that the great size of, and the raised pressure within, these veins during pregnancy causes greater risk of hæmorrhage.

The strawberry-like patches within the bowel cause great hæmorrhage, but little or no pain or discomfort. This sort of internal pile is only found by looking for it. I know not that they are exceptionally frequent in women who have had children. I should expect that they would bleed more during pregnancy than at any other time; but I know not that experience has shown this. No improvement is to be expected after delivery in a patch of this kind. Hence this sort of internal pile should be treated in just the same way in pregnancy as when the patient is not pregnant.

The treatment of the lumps of varicose veins consists in removing them. That of the strawberry-like bleeding patches is cauterisation with nitric acid. Refer for details to works on surgery.

Prolapsus of the rectum may be taken for piles. It is not a disease common in women during the years of reproduction; it occurs at the extremes of life, in infancy and old age. The prolapsed rectal mucous membrane is of a brighter red colour, and softer than piles. Piles form more isolated swellings, of firmer consistence and more livid colour. For information as to the treatment of prolapsus recti consult books on surgery.

Cancer of the rectum.—Pain in defæcation with bleeding and discharge are the local symptoms which cancer of the rectum causes. Bleeding and discharge are the earlier

symptoms; pain comes later. Discharge is more suspicious than bleeding, for slight bleeding is often a result of constipation. The only other common condition which causes discharge is fistula; and with this there is a history of an abscess. I mention this here because in cancer of the rectum, as in cancer of the uterus, success in treatment depends upon early diagnosis. If you overlook the early symptoms of cancer, you may rob your patient of her one chance of cure. *If a patient complains of discharge from the rectum, never omit to examine the bowel.* For detailed information as to the diagnosis and treatment of cancer of the rectum, consult works on surgery.

Stricture of the rectum.—Painful defæcation may be the result of stricture of the rectum. The stricture may be from cancer. Another kind, fibrous stricture of the rectum, deserves especial mention in a work on diseases of women, because it is three times commoner in women than in men: and because surgeons not well acquainted with the diseases of women fail to grasp its pathological relationships. It is sometimes said to be syphilitic, but no criteria other than the history have ever been pointed out by which a syphilitic stricture can be distinguished from a non-syphilitic one. In most cases of tubular stricture there is no clear history of syphilis. The syphilitic theory does not explain why such strictures are three times commoner in women than in men. There are two forms of fibrous stricture: the annular and the tubular. The *annular* is the result of pelvic cellulitis. With lapse of time it tends to soften and to disappear, although different cases differ much in the rate at which this change goes on. Cripps* relates with surprise a case of annular stricture from cellulitis ending in recovery; although such cases are familiar to gynæcologists. The *tubular* form consists in narrowing, thickening, and stiffening, by fibrous overgrowth, of the lower three or four inches (never more) of the rectum. This fibrous growth is a morbid change like that which when affecting the vulva and anus, is known as esthiomène, or lupus of the vulva (*see* p. 495). Tubular stricture of the rectum often accompanies this disease of the vulva, which consists of fibrous overgrowth and ulceration. Ball

* "Diseases of the Rectum," 2nd edition, p. 267.

remarks that whereas in strictures of other kinds and affecting other canals, ulcerations, fistulæ, etc., are found *above* the stricture, in fibrous stricture of the rectum they occur *below* it; this, he says, is "puzzling."* The reason is that these ulcerations are not effects of the mechanical action of the stricture, but are part of the disease which produces the stricture.

Stricture is easily recognised by digital examination of the rectum. For details as to its effects and treatment, consult works on surgery. The treatment is dilatation by bougies, and if that fail, freely dividing the stricture by an incision in the middle line back to the sacrum.

Pruritus ani.—Although pruritus ani probably affects women as much as men, yet it is less often a prominent complaint among women, because many of the conditions which cause it produce also symptoms connected with the genital organs, which the patient thinks more important.

Eczema, or rather dermatitis, of the vulva commonly extends back to the anus, and produces itching here as well as at the vulva. Its treatment is the same. Scabies and pediculi are enumerated in books as causes of pruritus ani; but I never heard of a patient in whom either disease was discovered from its producing itching at the anus.

Threadworms are generally said to cause itching about the anus, but I have known them present where there was no itching. The only treatment is to try to get rid of them; but their dislodgment is not easy.

Pruritus may be the result of piles, or of any condition which causes congestion of the lower part of the rectum or discharge from the bowel. In such a case treat the condition which causes the pruritus.

Lastly, there are cases in which by examination of the rectum and anus you can perceive nothing abnormal (excepting such changes in the skin outside the anus as have been produced by rubbing and scratching), and yet the irritation is distressing. In such cases, calomel ointment often acts as a specific. Combine with it laxatives, antacids, and abstinence from alcohol.

* "Diseases of Rectum and Anus," p. 142.

CHAPTER LIV.

INCONTINENCE OF FÆCES.

This means that the patient cannot retain fluid fæces. A rectum which will not retain fluid fæces will often retain scybala. The causes of this infirmity are: (1) Complete rupture of the sphincter ani, a condition almost always due to tearing of the perineum in parturition; (2) recto-vaginal fistula. This is generally due to parturition, but may be produced by cancer. Incontinence occurs also in some diseases of brain or spinal cord; but here the gynæcologist is not called in to explain it.

Rupture of the perineum has been known as long as midwifery has been practised. As the fœtal head emerges, it stretches first the vaginal, and then the vulvar orifice. The vaginal orifice is marked by the hymen. The posterior part of the vulvar orifice, which is the part made tense, is the fourchette. The vaginal orifice is in the nullipara its narrowest part. Consequently, if any part of the vagina is torn, it is this part. It is always torn in first labours. If the child is small, the tear may not involve the fourchette. Tears are often multiple and stellate, radiating from the vaginal orifice; but whatever other lacerations take place, there is always one in the mesial line. Tears are more numerous on the left than on the right side.

Such cases are the exception. In many (according to Duncan in 60 per cent. of first labours) the tear extends upwards through the mucous membrane of the vagina, backwards through the skin of the perineum, and through the tissues between them. This is *rupture of the perineum*. If the tear does not extend through the sphincter ani, it is called "*incomplete*" rupture.

Mechanism of production.—During delivery the perineum is stretched both from side to side and from before backwards. The tension on its anterior edge is from side to

side, and therefore rupture here occurs in a line perpendicular to that of greatest tension; that is, from before backwards.

When the anterior edge is stretched till it can stretch no more, it gives way, and the tear extends until by it the opening has been made large enough for the head to pass. The extent of the tear depends upon four factors. These are: (1) The *elasticity* of the tissues, that is, the power of the tissue elements to rearrange themselves so that the part may elongate. Tears of the perineum are especially met with in elderly primiparæ, whose tissues are less elastic than those of the young. The difference dependent upon age is not great, but it is real. We do not know what the structural peculiarities are which make one perineum more capable of stretching than another. (2) The *length* and *situation* of the perineum. The *length* of the perineum* in nulliparæ varies from five-eighths of an inch to two inches. The *situation* of the fourchette varies from as much as two inches behind the lower border of the symphysis pubis to close up to the symphysis. (See Figs. 40 and 41, pp. 133 and 134.) It is obvious that if the perineum is short and its anterior edge far back, less stretching will be required to let the child pass than if the perineum is long and its anterior edge far forward. (3) The amount of stretching required: in other words, the *size of the child.* The birth of large children is oftener accompanied with rupture of the perineum than the birth of small children. In children of average size the head is the largest part, and therefore that which tears the perineum. But in children of excessive size the trunk is larger in proportion to the head than in those of average size; therefore with very large children the perineum is liable to be torn, or a small tear to be made a large one, during the passage of the shoulders. (4) The *suddenness* of the stretching. The more gradual the stretching of the perineum the less likely is rupture to occur. Rupture of the perineum is especially apt to happen in labours completed by very strong uterine action (such for instance as is provoked by ergot), by which the child is quickly propelled through the genital canal; and in labours assisted with forceps, if the child is too rapidly pulled through the vulvar orifice. It

* *See* a paper by the author, "Obst. Trans.," vol. xxxi.

is not a necessary consequence of forceps delivery, for this can be so managed as to give the perineum time to stretch. In labour protracted by weak pains, but ended naturally, rupture of the perineum seldom occurs.

Central rupture of the perineum.—The common kind of rupture of the perineum is that which has been described above: a tear beginning at the tense anterior edge, and extending backwards. The tear generally begins in the middle line, but, owing to the vagina being thicker in the median raphe, an extensive tear seldom keeps in the middle line. There are less common ways in which rupture occurs. One is called *central rupture*. In this form, the tear begins in the posterior wall of the vagina, above the orifice. Then, as the head is forced on, it presses into the tear in the vagina, widens it, presses asunder the muscular and fibrous structures of the perineal body, bulges down the skin in the middle of the perineum, and finally tears it. The tear, thus begun in the middle of the perineum, may extend forwards to the fourchette, and backwards to the anus, central rupture thus becoming complete. The above is what I think is the common mode of production of central rupture of perineum. But the tear of the vagina and cellular tissue of perineum may not involve the skin of the perineum. The skin of the perineum may be centrally split without injury to the mucous membrane of the vagina (Matthews Duncan). The cellular tissue of the perineum may be torn without tear of either vaginal mucous membrane or perineal skin. The formation of a central perforation may begin in either of these ways, the order of tearing being not always the same. Children have been born through central rupture of the perineum without injury to either anus or fourchette;* although I think with Madame Lachapelle and Matthews Duncan that it is more common for delivery to take place through the vaginal orifice even when there is a central rupture.

Rupture from above downwards.—There is a still rarer mode of rupture of the perineum that I have once seen. The recto-vaginal septum was first torn through, and then this tear extended downwards through the perineum. After the head had been delivered, the hand protruded through the

* *See* F. H. Ramsbotham, "Obst. Med. and Surgery."

anus, and then the shoulder came down, tearing the perineum from above downwards. Such rupture is, of course, always complete. This mode of rupture has also been reported by Baudry.*

Healing of perineal rupture. — If left untreated, *incomplete* rupture of the perineum usually unites by the union of granulations on opposite sides, through part only of its extent; so that the perineum remains shorter than it was before. *Complete* rupture of the perineum occasionally heals without treatment; but this is exceptional.

Results of rupture of perineum.—Complete rupture of the perineum deprives the patient of the power of retaining fæces in the rectum (Fig. 205). If a few fibres of the sphincter ani remain intact, so that its power is not destroyed, but only weakened, the patient may be able to retain scybala, but unable to keep in fluid fæces.

Fig. 205.—Complete rupture of perineum. (*After Pozzi.*)

Incomplete rupture of the perineum enlarges the vaginal orifice. The consciousness of being "more open" is sometimes disagreeable to the patient. If the patient suffers from descent of the uterus or vagina, for which the support of a pessary is beneficial, the shortening of the perineum may make it difficult or impossible to get a vaginal pessary retained.

Neither complete nor incomplete rupture of the perineum can cause prolapse of the uterus. I have seen patients whose perineum had been ruptured for twenty years and more in the first and only confinement, who had suffered since from inability to retain fæces, but had not the slightest prolapse. But in the way above described, rupture of the perineum much affects the success of mechanical treatment of prolapse.

Central rupture of the perineum may heal incompletely,

* *Annales de Gynécologie*, Juillet, 1894.

leaving a fistulous channel between the vagina and the perineum. Madame Lachapelle thought that such a fistula was its usual consequence. That such fistulæ are seldom seen is a gratifying illustration of the progress of obstetric surgery.

Treatment.—There is only one treatment for rupture of the perineum, and that is a plastic operation to restore the perineum.

The operation for complete rupture of the perineum.—This is best done about two months after delivery; that is, when involution is complete. It consists in making a raw surface which shall include the divided ends of the sphincter ani, and bringing these together with stitches. It differs from the method of extending the perineum forwards, which is done for incomplete rupture of the perineum with prolapse, for the purpose of enabling the patient better to retain a vaginal pessary, and which is called posterior colporrhaphy, in that (1) the raw surfaces must be so accurately brought together that union may take place by the first intention If such union does not take place, the contraction of the sphincter ani will prevent union by granulation, and the operation will be a failure. (2) If the patient is likely to have more children, the new perineum should not be longer than a normal perineum; that is, it should not exceed an inch and a half. (3) As little tissue as possible should be removed, so that the operation may not contract the genital canal, and thus make labour difficult. The latter condition is best complied with if the raw surface is made by splitting the recto-vaginal septum, and not by dissecting off mucous membrane as in posterior colporrhaphy. This is an old practice that has recently been written about as if it were a novelty. I was taught it by Mr. Waren Tay in 1874, and he learned it long before from Mr. Jonathan Hutchinson. Mr. Lawson Tait has recommended a way of putting in the stitches which makes the operation a quick one, but brings with it a liability to abscess of the recto-vaginal septum; therefore I describe it not. I shall describe the operation as I do it, which I think is the way in which a firm perineum can be made with the least removal of tissue.

Instruments required—

Clover's crutch.
Toothed dissecting forceps.
Scissors.
Four pairs of artery forceps.
Six half-curved needles.
Needle holder.
Large curved perineum needle in handle.
Silkworm gut.
No. 1 catgut, iodoform, Gamgee tissue.
T bandage, douche-tin, etc.

The anæsthetised patient being in the lithotomy position, make the raw surface by splitting the recto-vaginal septum from side to side, along the line A B (Fig. 206). At the ends of the line of split, cut through the skin at right angles to it, forwards and backwards, and raise up the corners thus formed by detaching them from the underlying tissue. Thus, without taking away any skin or mucous membrane, you will have a raw surface of the shape of two triangles, the base of each, C D and G H, being formed by the skin of the perineum, the sides by the mucous membrane of the vagina in front and the rectum behind, the apices being truncated and meeting in the middle line. The line A B passes through the middle of each triangle, and bisects its base; when I speak of the middle of the raw surface, I mean this line. Having made the raw surface, take now the large curved perineum needle. Enter its point about half an inch outside B; pass it through the recto-vaginal septum above the raw surface, so that the suture it is to carry shall be completely buried within the septum; bring it out about half an inch outside A. Thread it with silkworm gut, and withdraw it. While passing the needle, hold one finger of the left hand in the rectum and another in the vagina, so as to be sure that the needle is traversing the recto-vaginal septum. The object of this silkworm gut stitch is to support the parts, and prevent strain from being thrown on the catgut stitches which are to hold the raw surfaces in apposition. Seize each end of the silkworm gut stitch with pressure forceps, and let them hang down out of the way. Now take half-curved needles threaded with catgut. Enter the first stitch at the junction of the rectal

mucous membrane and raw surface, close to the apex of the triangle, and bring it out at the middle of the raw surface. Enter it again at the middle of the raw surface on the opposite side, and bring it out as close as possible to the

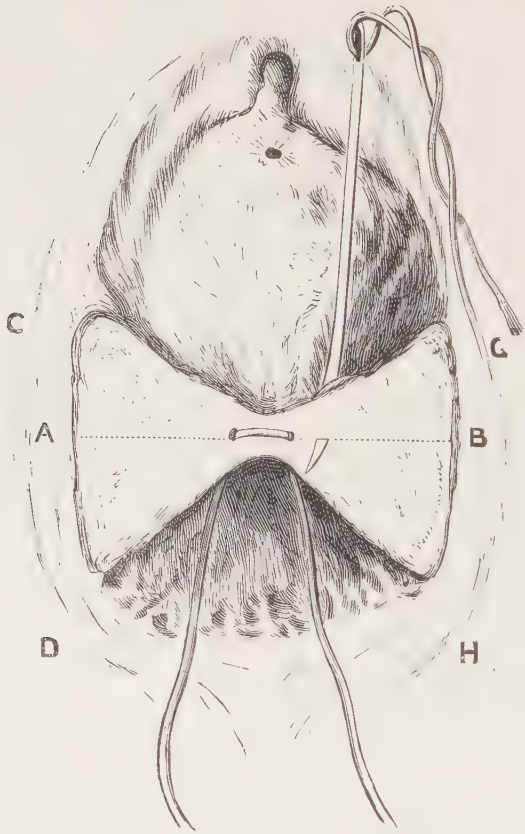


Fig. 206.—Repair of ruptured perineum. (*Drawn by Dr. W. Ambrose Kibbler.*)

junction of mucous membrane and raw surface. Tie this suture, grasp its ends with forceps, and let them hang down out of the way. Put in the second suture at the junction of vaginal mucous membrane and raw surface, bring it out at the middle of the raw surface, nearer the base of the triangle than the first suture; enter it at a corresponding point in the middle of the raw surface on the opposite side, and bring

it out as close as possible to the junction of vaginal mucous membrane and raw surface. Then tie it. (The diagram shows the first stitch passed, but not tied, and the second stitch being put in. This is for the sake of pictorial clearness, but it is better to tie each stitch before putting in the next; and it is convenient not to cut off the ends at this stage, because by them the part can be pulled upon if wished.) The third suture is entered between the rectal mucous membrane and the raw surface, still nearer the base of the triangle, and so on, sutures being entered alternately from the rectal and vaginal aspects, until the whole of the raw surface has been brought into apposition by a row of vaginal and a row of rectal stitches. Take care that the stitches do not go beyond the middle of the raw surface so as to overlap. When all except a strip of raw surface parallel with the base of each triangle (C D, G H) has been brought together, complete the apposition of the bases by transverse stitches going through the skin of the perineum. Before tying these transverse stitches, tie the deep silkworm gut suture so as to press the raw surfaces together, and support the catgut stitches. When the stitching is complete, cut short the ends of all the catgut stitches; leave those of the silkworm gut stitch about an inch long. Powder the part with iodoform, apply a pad of Gamgee tissue, and keep it in place with a T bandage. Let the nurse wash the rectum out twice a day for a fortnight. Let the patient pass urine naturally if she can; if not, she must be relieved by the catheter. I think it is better to have her knees tied together; this lessens the strain on the stitches. Take out the silkworm gut stitch at the end of a week. Leave the catgut stitches to be absorbed.

Recto-vaginal fistula—that is, an opening between the rectum and vagina—is seldom produced by sloughing, because at the pelvic brim, the place where the tissues are most often nipped and made to slough, the rectum is at the side of the sacral promontory, and therefore out of the way of pressure. Such a fistula is generally the result of incomplete union of rupture of the perineum, the lower part of the rent healing, the upper not. These fistulæ are seldom large.

A recto-vaginal fistula permits the escape of fæces and flatus involuntarily from the rectum into the vagina. It

can be cured by a plastic operation, and in no other way. What is the best operation depends upon the size and place of the fistula. If small and easily got at, or high up, it will be best to pare its edges and bring them together with wire sutures and coil and shot, in the same way as I have advised for a small vesico-vaginal fistula. If large and low down, it may be better to cut through the part of the recto-vaginal septum which is below the fistula, and then perform the same operation as for ruptured perineum.

Part XI.

ABDOMINAL TUMOURS.

CHAPTER LV.

OVARIAN TUMOURS.

The common abdominal tumours in women.—There are three abdominal tumours common in women: pregnancy, ovarian cysts, and uterine fibroids. In Chapter XLIV. I have described the diagnosis of normal pregnancy. Cases of ectopic and complicated pregnancy, advanced enough to form an abdominal tumour, are less common than either ovarian or uterine new growths. Great enlargement of the belly, due to ovarian cysts, is rather commoner than that due to uterine fibroids. I shall therefore first describe the kinds of ovarian tumours, their clinical history, their diagnosis, and their treatment.

Ovarian new growths.—It is not surprising that the organ whose cells have the extraordinary power of, under certain conditions, producing another human being, should, with different conditions, be apt to produce new growths. Such growths in the ovary are common, and very various in nature. There are other tumours found in the belly, which are not ovarian, but grow from structures near the ovary. As these cannot clinically be distinguished from ovarian tumours, I shall describe them together.

The ovary is remarkable, not only for its power of producing new growths, but for the variety of these new growths, and the various combinations of different kinds of new growth. Ovarian tumours may be broadly classified into five groups—

1. Simple, or unilocular, cysts.
2. Multilocular cysts.

3. Papillomatous cysts.
4. Dermoid cysts.
5. Malignant tumours.

Each of these groups has definite distinctive characters. But between them are found tumours which present some characters of one group, some of another, and therefore are intermediate transition forms between the main types. In describing these tumours I shall begin with the simplest, and as I pass from one to another, I shall point out the transition forms which lie between the well-marked types.

The origin of ovarian tumours.—The common ovarian tumours are cystic. A cyst is a bag containing fluid. The ovary is full of bags of fluid, in size varying from one requiring a microscope to see it, up to that of a cherry. These

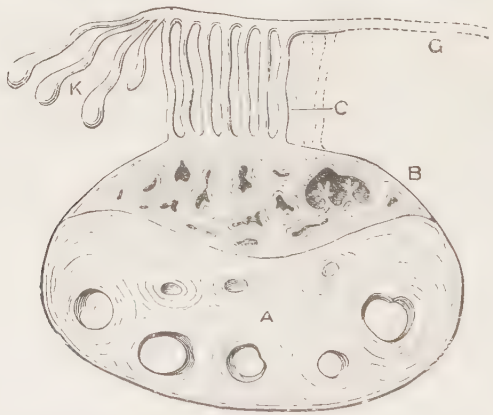


Fig. 207.—Diagram representing the cyst regions of the ovary. (*After Bland-Sutton.*)

A, oöphoron, or egg-bearing portion of ovary; B, para-oöphoron, or hilum of ovary; C, parovarium; K, Kobelt's tubes; G, Gartner's duct.

are called Graafian follicles, and they contain ova (Fig. 207). These bags ought, when they get a certain size, to burst, and let out the ova. If such a bag should not burst, but go on getting bigger and bigger, of course it will form a large tumour. If two or three bags should go on enlarging instead of bursting, then we shall have a large tumour composed of more than one compartment (Fig. 208). This is such a simple and natural way of explaining the development of

ovarian tumours that one would think any other must only apply to exceptional cases.

Why ovarian tumours develop. — We know not why follicles develop into cysts. Various explanations have been given: degeneration of the epithelium, extra thickness of the fibrous capsule, "deficient bursting force" (whatever this means), hæmorrhage, inflammation, etc., etc. These are merely verbal theories. We know nothing as to the causes of ovarian tumours, except that they are least common in women who have many children; most common in women who have no children.* They occur at all ages, in the single and in the married, in the plump and in the thin, in the rich and in the poor, in those with disease elsewhere and in those without it. We can neither predict nor prevent them.

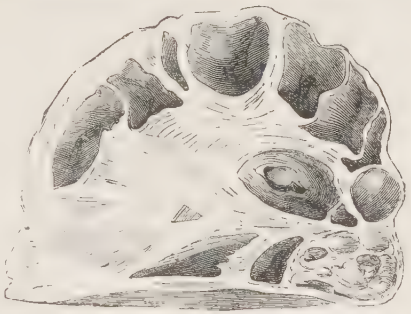


Fig. 208. — Enlargement of Graafian follicles. Early stage of cystic disease. (*After R. Barnes.*)

Hydrops folliculi.—In the ovary, as elsewhere, no sharp line can be drawn between health and disease. Small bags of fluid in the ovary are normal, and are called healthy follicles. When one of these bags is bigger than usual, it is said to be dropsical, and is called *hydrops folliculi*. It is not possible to define what is the largest-sized follicle that ought to be called healthy, what the smallest that may rightly be termed dropsical.

Simple ovarian cysts.—When there is only one large bag of fluid in an ovary, but this bag is too large to be called a dropsical follicle, it is called a simple ovarian cyst. It is impossible to draw a line which all will accept as correct between a dropsical follicle and a cyst: to say what size is too large to be called hydrops folliculi, what too small to be called a cyst. A practical distinction hangs upon the nomenclature. A dropsical follicle in an ovary gives no trouble; and no one would, on account of hydrops folliculi, advise

* *See* Sir J. Williams, *Brit. Med. Journal*, July 10, 1897.

the removal of an ovary. But when there is a bag of fluid in an ovary so big that everyone would agree in calling it a cyst, everyone would also agree in saying that it would certainly grow bigger, and ought to be removed as soon as possible. Simple ovarian cysts are never large. In cysts much larger than a hen's egg, if they seem simple, careful examination will generally detect smaller cysts in their walls. Small simple cysts are, so to speak, young cysts, and therefore degenerative and inflammatory changes are rare in them. Their wall is thin, greyish, often translucent. They are lined with columnar epithelium, like that of the membrana granulosa. The fluid they contain is serous, seldom blood-stained or colloid, of specific gravity from 1005 to 1020. The ovary is either attached by its edge to the cyst, or spread out over part of the cyst.

Lutein cysts.—Some cysts are lined with yellow matter, like that of the corpus luteum. It is inferred that such cysts have developed in a corpus luteum, that is, that a follicle has burst, discharged its ovum, and the cavity has afterwards developed into a cyst. These are called lutein cysts; they are seldom large.

Simple ovarian cysts, as a rule, give no trouble. Sometimes they cause dull aching pain, which brings the patient for treatment. As they are seldom adherent, their removal is easy, and attended with hardly any danger.

Papillary adenomatous growths in simple ovarian cysts.—Very rarely small papillary adenomatous growths are found in simple ovarian cysts growing from the oöphoron, and therefore believed to be dropsical Graafian follicles.* I shall point out presently the pathological significance of this. The presence of such growths does not alter the clinical history.

Tubo-ovarian cysts.—A tubo-ovarian cyst is one formed of an ovarian cyst which communicates, usually by a large opening, with a dilated Fallopian tube.† Such ovarian cysts are usually unilocular‡, but may be multilocular. Tubo-ovarian cysts are seldom larger than a child's head. Two

* *See* Pfannenstiel, "Arch. für Gyn.," Bd. xlviii.

† *See* Griffith, "Obst. Trans.," vol. xxix. p. 273; and Doran, *ibid.*, p. 306; also vol. xxx. p. 3.

‡ Eighteen out of twenty-two in Griffith's collection.

processes are necessary for their formation: (1) adhesion between tube and ovary; (2) perforation of the cyst wall. As the ovary is near and, there is reason to think, at certain times grasped by the fimbriated end of the tube, should inflammation occur, the fimbriæ will be fixed round the ovary. If when this has happened, a Graafian vesicle or corpus luteum should develop into a cyst, the tube will be adherent to the wall of the cyst. The perforation of the cyst wall probably takes place by a process of atrophy like that which leads to absorption of septa and fusion of cavities in multilocular cysts. The probability is, however, that the tube is already inflamed, closed, and dilated before it becomes adherent to the ovary, because inflammation about normal ovaries is usually set up by extension from the tube. It is conceivable that the ovary may be cystic before it becomes adherent to the tube; but this is unlikely, because enlargement of the ovary disturbs its normal relations with the tubes.

There are seldom great constrictions or projecting folds marking the fusion between the cyst and the tube, such as often mark the junction of two cavities in a multilocular ovarian cyst. This is a reason for thinking that the fusion of ovary and tube takes place early. The uterine end of the tube, whether absolutely sealed or not, is practically blocked, or else the fluid would escape by the uterus. In some reported cases it is said to have done this.* The folds of the distended tube are effaced by the distension, and its epithelium may have been destroyed.

It is often difficult to say whether a cyst, into the formation of which both ovary and tube enter, is a tubo-ovarian cyst, or a hydrosalpinx to the wall of which the ovary is adherent. Doran† thinks the dilated part of the tube is often mistaken for a cystic ovary. I find it difficult to understand why the cysts that become fused with Fallopian tubes should be so often unilocular, seeing that unilocular tumours form only a small minority of ovarian tumours generally. It is remarkable also that signs of recent perforation of the ovarian cyst are so rarely seen, although

* Barnes, "Diseases of Women," 1st edition, p 324; also Wells, "Ovarian and Uterine Tumours," p. 18.

† "Obst. Trans.," vol. xxxviii. p. 3.

tubo-ovarian cysts are generally small. I therefore am disposed to agree with Doran. On the other hand, Pozzi* thinks that most cases described as hydrosalpinx which exceeded a fœtal head in size were probably tubo-ovarian cysts. This also may be correct.

Multiple dropsical follicles: Rokitansky's tumour.—In most small ovarian tumours, either only one follicle is

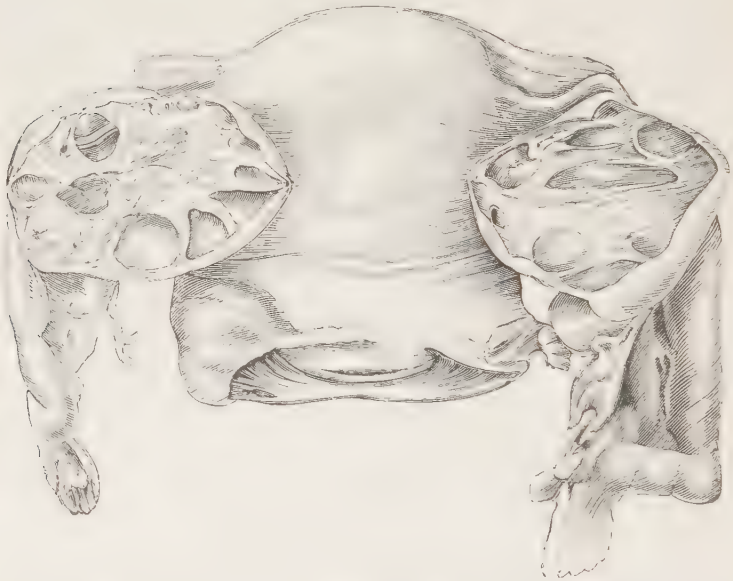


Fig. 209.—Multiple enlargement of Graafian follicles in both ovaries: Rokitansky's tumour. (*After R. Barnes, from a specimen in the Museum of the Middlesex Hospital.*)

dropsical or there is one big cyst and many little ones. There is a rare kind of tumour, in which the ovary may get as big as a child's head, but is enlarged not by the size of the cysts but by their number. The tumour is made up of little cysts, most of them about the size of a cherry, or smaller; a few perhaps a little larger, up to the size of a small orange. These are all closely packed together, and flattened by mutual compression. In these little cysts, little or no degeneration of their contents has taken place, and therefore ova can be found in them. The name of Rokitansky's tumour

* "Gynæcology," N.S.S. Translation, vol. ii. p. 343.

has been given to this form of ovarian new growth, because the first recorded specimen of it was described by Rokitansky. It is rare; and in the few specimens that have been removed both ovaries were similarly diseased (Fig. 209). We know not the reason why so many follicles should get dropsical. Some, with Olshausen, think that there is no essential difference between these tumours and the multilocular cystoma; that tumours are found which indicate a transition from one

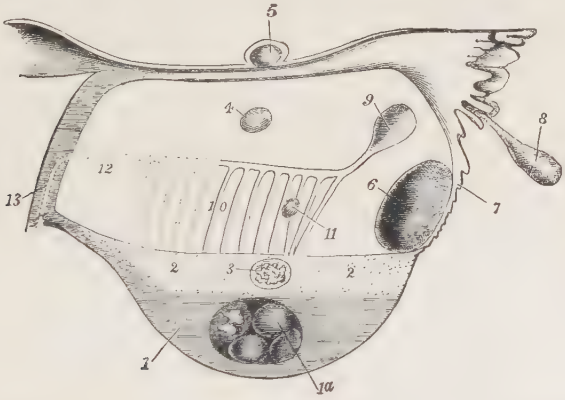


Fig. 210.—Diagram of the structures in and adjacent to the broad ligament. (*After Doran.*)

1, Parenchyma of ovary, seat of 1a, glandular or multilocular cyst; 2, hilum, with 3, papillomatous cyst; 4, broad ligament cyst, independent of parovarium and Fallopian tube; 5, similar cyst in broad ligament above the tube, not connected with it; 6, similar cyst developed close to 7, ovarian fimbria of tube; 8, hydatid of Morgagni; 9, cyst developed from horizontal tube of parovarium; 10, parovarium, the dotted lines representing portions obsolete in the adult; 11, small cyst developed from a vertical tube; 12, duct of Gartner; 13, track of Gartner's duct in uterine wall.

into the other. As we know not the causes of either, the point is not at present important.

Rokitansky's tumour is so rare that assertions about its clinical peculiarities must be based on very few cases; therefore I refrain from making any beyond this: that it is bilateral, and the solid feeling which this collection of small cysts gives, may make you suspect malignant disease, but yet the mobility of the tumour will indicate operation. When the belly is opened, the discovery of the nature of the tumour will be a pleasant surprise.

The simple ovarian cyst and Rokitansky's tumour represent the earliest stages of tumour development from the

egg-bearing part of the ovary; and for that reason I have described them first.

Parovarian, or simple broad ligament cysts.—When the broad ligament is held up to the light, the parovarium, or organ of Rosenmüller, is seen between its layers (Fig. 210). This consists of from five to twenty-four—generally about eight or ten—fine tubes, running vertically to the long axis of the ovary, and entering the para-oöphoron, or hilum of the ovary. These tubes are the remains of the Wolffian body.

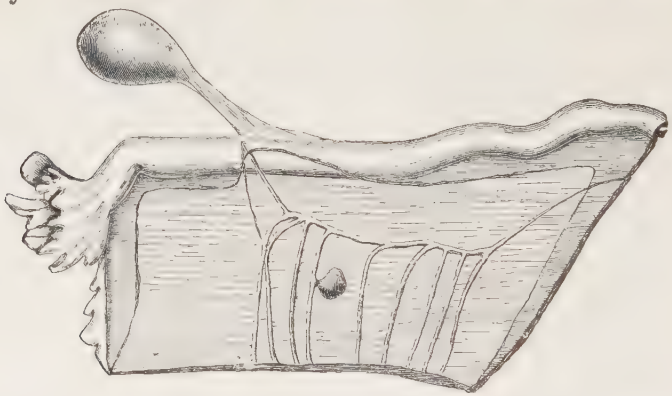


Fig. 211.—Left broad ligament, from nature. (*After Doran.*)
Its posterior layer has been removed. The duct of Gartner is distinct. A cyst is developed from one vertical tube. A larger cyst is continuous by a thin cord with the horizontal duct.

Their ends remote from the ovary are joined by a horizontal tube, running parallel with the long axis of the ovary, inwards towards the uterus. This is called the duct of Gartner. These cysts are called *parovarian cysts* because they are believed to develop out of these vertical parovarian tubes (Fig. 211). They are called, with equal correctness, *simple broad ligament cysts*, because they are simple and develop in the broad ligament. Doran, whose experience and skill entitle his opinion to respect, holds that these cysts arise in the broad ligament apart from the parovarium (*see* Fig. 210). Handley* has shown that some of these cysts are dilated accessory Fallopian tubes. There is reason also to think that some small broad ligament cysts are dilated lymphatics.

Morbid anatomy.—The distinctive marks of these tumours are: (1) The ovary is usually attached to the side of the cyst

* "Obst. Trans.," 1903.

(Fig. 212). (2) The Fallopian tube is stretched across the top of it, and if the tumour is large, the tube is elongated, and the mesosalpinx thickened. (3) The peritoneum is easily stripped off. (4) The fluid is clear, limpid, straw-coloured, of specific gravity of 1010 or less. (5) These tumours are generally unilocular.

When small, the walls of these cysts are thin and translucent; when large, the walls are thicker. They are, when small, lined with columnar epithelium; but when larger, this

Fig. 212.—Simple broad ligament cyst, in the opinion of Doran; but by some called parovarian. From nature. (*After Doran.*)

becomes first stratified from pressure, and then atrophied. Their fluid contains albumin; they are often big enough to hold several pints of fluid, but do not get so big as some other tumours. They are never met with in children. According to Bland-Sutton, they form about 10 per cent. of the tumours diagnosed clinically as ovarian cysts.

Clinical features.—From the fact that simple parovarian or broad ligament cysts are never seen very big, it is probable that if let alone they would reach a certain size and then cease growing. At the present day no competent observer waits to see; for until the belly is opened these tumours cannot be distinguished from those which do not stop growing. From this peculiarity it happens that these tumours, when tapped, or accidentally burst, are sometimes cured; the fluid being let out, further secretion ceases, or becomes no

more than the peritoneum can instantly absorb. These cases were those which, when ovariotomy was on its trial, enabled its opponents to say that some cases remained well, or were cured without that operation. The fluid which these tumours contain is not irritating; hence when such a cyst is burst or tapped, or its fluid escapes into the peritoneum during operation, the patient is none the worse. These tumours seldom excite inflammation and therefore are seldom adherent. They affect not the general health, and as they do not grow very

Fig. 213.—Large papillomatous cyst springing from the hilum of the ovary, the greater part of which organ is not involved in the morbid growth. The cyst has forced its way between the layers of the broad ligament as far as the Fallopian tube. (*After Doran.*)

big, nor irritate the peritoneum, they do not cause ascites nor œdema of legs. From the preceding characters it follows that their operative removal is usually simple and easy, and attended with hardly any danger. Some of these cysts grow in the mesosalpinx, and then they have a pedicle as easy to secure as that of an ovarian cyst. Some grow deeper down, in the mesometrium, and these have to be enucleated. Unless there are deep papillary growths this is generally easy, and bleeding trifling. But no one can be sure of the nature of a cyst until the belly has been opened. These tumours never recur after removal.

Papillary growths in parovarian tumours.—Some few of these simple cysts contain small papillary adenomatous

growths* (Fig. 213). This marks their commonly accepted relationship to the papillary tumours of the para-oöphoron. If the characters of the tumour are in other respects those of a simple broad ligament or parovarian cyst, the presence within it of some small papillary adenomatous growths does not modify the clinical history.

Multilocular cysts.—Next in point of innocency are the *glandular multilocular cysts, or multilocular adenomata.* Some think that these originate in Graafian follicles: others that they grow from the germinal epithelium on the surface of the ovary.

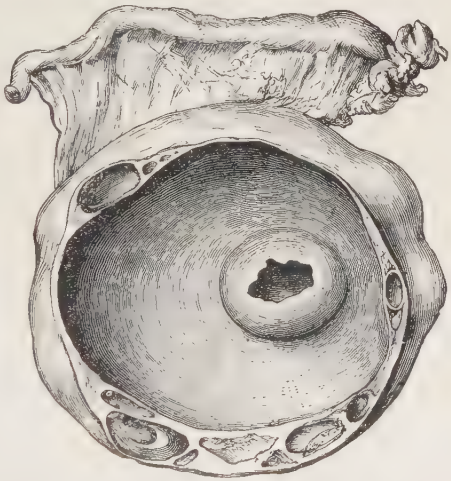


Fig. 214.—Small multilocular ovarian cyst. (*From a specimen in the Museum of the Royal College of Surgeons, Pathological Series, No. 275. After Doran.*)

These tumours consist of a big cyst with many little cysts (Fig. 214). The smaller cysts vary in size, from those requiring a microscope to see them, to cavities nearly as big as the main cyst. Some of the little cysts are contained in the wall of the big cyst; others bulge into its interior. The larger of the small cysts contain other cysts bulging into them (Fig. 215). The big cyst usually shows evidence of having been formed not by the continuous enlargement of one cavity, but by other cysts having burst into the main one, so that their cavities come to form one cavity. When such rupture takes place, the septa tend to shrink and disappear, so that the junction of two cysts is marked by a fibrous ring of constriction in the interior of the big cyst. It is generally believed that the little cysts growing in the wall and into the cavity of the big cyst are, so to speak, children and

* *See* Pfannenstiel, op. cit.

grandchildren of the big cyst; one original cyst having the power of producing an indefinite number of descendants. This mode of growth is called *endogenous* growth. Sometimes other cysts are found outside the big cyst, and so distinct in outline from it as to suggest that they have grown

Fig. 215.—Portion of glandular, adenomatous, multilocular tumour of ovary, showing varieties of loculi. (*After Bland-Sutton, from nature.*)

c, primary, *d*, secondary, loculi.

independently from the ovary: this is called *exogenous* growth. These latter tumours form the transition between the ordinary multilocular cysts and Rokitansky's tumour.

The little cysts have thin and translucent walls. The wall of the big cyst is generally tough and opaque from fibrous tissue; and on the outside white, glistening, pearly. Sometimes it is composed of different layers, in which case

it is supposed that one cyst inside another has grown until the wall of the inner cyst has come into contact with that of the outer. Often it contains thin places where there was a daughter cyst which has burst into the main cavity. The small cysts are lined inside with columnar epithelium; in the bigger ones this is flattened out by pressure into pavement epithelium; and in the largest the lining epithelium may be atrophied. Sometimes on the inside of the big cyst there are shining flakes of cholesterine, and sometimes calcareous granules and flakes. These latter are degenerate changes which indicate slow growth. Often the wall of the cyst is dotted or streaked with ecchymoses, and sometimes with yellow or brown spots or patches, believed to result from the decolorisation of old effusions of blood.

The contents of ovarian cysts.—The fluid of multilocular cysts is colloid; that is, gummy, slimy, tenacious. It is generally thickest in the smallest cysts, and in them is pearly grey. Its specific gravity varies from 1015 to 1050. In large tumours there has generally been more or less bleeding into it, and the mixture of blood, according to its quantity, and the length of time since its effusion, makes the fluid yellow, green, brown, reddish, or blackish. At one time (when it was common to tap ovarian tumours) the chemical and microscopical characters of the fluid were supposed to be very important for diagnosis. Special ovarian cells were described. But no inferences of value are to be drawn from either the chemical or microscopical examination of the fluid withdrawn from an ovarian cyst. Therefore to tap a tumour in order to get some fluid for examination is useless, and it exposes the patient to risk.

Clinical characters.—Multilocular ovarian tumours go on growing bigger and bigger until they kill the patient. They never stop growing. There is no cure for them but their complete removal by operation. The fluid they contain is very slightly irritating to the peritoneum. Hence if during operation some of it gets into the peritoneal cavity, no harm follows. If they burst, acute peritonitis does not follow. In the course of weeks some injection and thickening of the peritoneum leading to adhesions may be produced, but this causes no grave symptoms. If the opening in the cyst heals,

it will refill and get bigger. If the opening does not close, the cyst goes on pouring out fluid into the peritoneum, and causes ascites, which will recur indefinitely if it is treated by tapping only. Multilocular cysts cause inflammation by their pressure. Hence adhesions are often present when the tumours are large, but seldom when they are small. They do not cause ascites, and only cause œdema of legs when they are very big indeed. When they are so large that they interfere with exercise, appetite, and sleep, or cause pressure symptoms, they interfere with nutrition, but not till then.

Unless they are extensively adherent, their operative removal is easy. When completely removed, they never recur. But if a bit of the tumour be left behind, either in the pedicle, or attached to a viscus, or to the abdominal wall, it will go on growing.

Sessile, thin-walled, colloid cysts.—There is a rare kind of ovarian tumour which has been described by Lawson Tait.* The cysts are sessile in the pelvis; the cyst walls are very thin, and the contents very viscid and tenacious, like glue, rather than jelly. I have met with one such case. The operation seems very difficult, from the impossibility of getting out the cyst and securing the pedicle. But if Tait's view be correct, it is not necessary to get out such a cyst. He regards these as ovarian tumours undergoing spontaneous cure, in which, if they could be diagnosed, operation would be unnecessary. He thinks that the fluid in the cysts digests the cyst wall, and that if let alone the peritoneum would probably digest the cyst contents. I do not see sufficient reason for this theory. But the practical fact remains; in such cases remove as much of the gluey stuff as you can, and do not trouble about the cyst wall.

Glandular multilocular cysts. — In some multilocular cysts there is not only a lining of columnar epithelium, but this contains glandular acini, lined with regular columnar epithelium (Fig. 216). Such a lining membrane is histologically a mucous membrane. Such cysts are called glandular or adenomatous multilocular cysts. In some such cysts Mr. Bland-Sutton† has found hairs growing. These cysts

* *Lancet*, May 16th, 1896.

† "Surgical Diseases of Ovaries and Fallopian Tubes," p. 58

form a transition between ordinary multilocular cysts and ovarian dermoids.

Papillary adenomatous growths in multilocular cysts.—In some cases papillary growths, composed of adenomatous tissue, project into the interior of some of the loculi of multilocular cysts; or thicken their wall at one point, like the seal of a signet ring. These cases form a transition between the multilocular tumours which are generally believed to

Fig. 216.—Section of the wall of a loculus from a glandular multilocular tumour, showing adenomatous growth. (*After Bland-Sutton.*)

grow from the oöphoron, and papillary tumours, which are generally believed to grow from the para-oöphoron.

Different opinions as to origins of ovarian tumours.—Some histologists * hold that there is no essential difference as to their place of origin between papillary and multilocular cysts; and the occasional occurrence of multilocular cysts with adenomatous papillary growths inside them is in favour of this view. The general opinion is that stated in the next

* *See* Pfannenstiel, op. cit.

paragraph. The difference in opinion is explained by the rarity of specimens capable of throwing light on the question. Tumours as large as those commonly removed so alter the rest of the ovary that they give no information as to their origin. The question can only be settled by the examination of many tumours so small that their relations to the different parts of the ovary can be defined.

Papillary tumours.—It is generally believed that these spring, not from the oöphoron, the parenchyma, or egg-bearing part of the ovary, but from the para-oöphoron, the hilum, the part into which the tubes of the parovarium enter (Fig. 207); and that the cysts are developed from these tubes. The few cases in which papillomatous cysts seem to develop in the ovarian parenchyma are explained, in the opinion of those who hold this view, by the penetration of the parovarian tubes to an unusual extent into the ovarian parenchyma.

Fig. 217.—Incipient papillomatous cyst of the hilum. Above to the right is seen the free portion of the ovary. (*After Doran.*)

These cysts are seldom allowed to grow as large as the multilocular cysts with colloid contents, because they give trouble sooner, and therefore operation is generally done earlier. They grow slowly. They are lined with ciliated epithelium, but in the large cysts this epithelium may become altered from pressure. They contain thin, cloudy, serous fluid, not tenacious, slimy, colloid matter. They are generally multilocular. About half of them grow between the layers of the broad ligament, instead of having a narrow pedicle and rising up out of the pelvis. Therefore they often cause pressure symptoms early.

They contain papillary growths (Figs. 213, 217). These grow rapidly, as branching villous processes, which are fragile, break down easily, and bleed readily. Often they contain small, gritty, calcareous particles like grains of sand, therefore

called *psammomata*. In about a third of such cases, these papillary growths are *adenomata*. There are often papillary growths outside as well as inside the cyst: either on the surface of the cyst or on the other ovary (Fig. 218). Adenomatous papillary growths are not malignant; they do not

Fig. 218.—Bilateral ovarian papillomatous growths. Papilloma on the surface of the ovaries. (*After R. Barnes, from a specimen in the Museum, University College Hospital.*)

invade adjoining tissues, nor cause metastatic growths, nor produce cachexia, nor recur after extirpation. They are often bilateral.

There is no way of distinguishing purely adenomatous papillary growths from those which are carcinomatous or sarcomatous, except by microscopic examination after removal. The adenomatous growths present nothing but gland tissue with regular columnar epithelium, connective tissue, and vessels supporting the gland tissue (Fig. 216).

Clinical features.—These tumours are seldom as large as the multilocular tumours, because, owing to their frequent intra-ligamentous situation, they early begin to cause pressure symptoms, such as uterine hæmorrhage, pain down the thighs,

œdema of legs, dilatation of the ureters and pelves of the kidneys, ascites.

Their intra-ligamentous growth makes operation very difficult. Their enucleation often causes great hæmorrhage, not from one or two large vessels, which can be seen and secured, but from many points on a surface too firm to allow vessels to be picked up and tied. Because enucleation is difficult, bits of the tumour are apt to be left behind; and if so, these bits will grow.

The removal of a large intra-ligamentous papillary cyst is one of the most difficult and most dangerous operations in the whole range of surgery, and it is often impossible until the belly has been opened to say that an ovarian tumour is not of this kind. Ascites is present in the majority, and occurs early. Papillary outgrowths may be on the outside of the tumour, and on the peritoneum; and if the tumour is removed, and these peritoneal growths are left, they may go on growing. When masses of papilloma are found growing from the peritoneum, the usual ending is in death, such as occurs from peritoneal cancer. But cases have been watched by competent observers* in which there were masses of papillary growth on the peritoneum, and yet the patients got quite well, and the lumps in the belly went away. The explanation of these differences in the course of what seems to be the same disease is the fact that some papillary growths are adenomata, some carcinomata. We cannot at present distinguish without the microscope between adenomatous and carcinomatous papillomata. Adenomatous papillary tumours do not invade adjoining tissues, nor cause metastases, nor produce cachexia. If an adenomatous tumour has been completely removed it does not recur.

Carcinomatous papilloma.—In more than half of ovarian tumours with papillary growths, these are *adeno-carcinomatous;* that is, the growths are made up of glandular acini, which, instead of containing a lining of regular columnar epithelium, contain heaped-up epithelial cells of irregular sizes and shapes. These give trouble so soon that they are seldom bigger than a man's head. There are often growths outside as well as inside, and often these break down so easily that

* Tait, "Diseases of Ovaries," 2nd edit., p. 147. *See* also Olshausen, op. cit.

their cancerous nature is suspected. But the case with which they break down is not a character so definite that we can depend upon it as a test whether a tumour is malignant or not. These tumours in more than two-thirds of the cases are bilateral. They grow more quickly than adenomata and as they grow they tend to displace adjoining parts. They cause cachexia and great ascites. In about a third of them secondary growths are present in the peritoneum. Metastatic growths also occur: they have been found in the vagina, the retro-peritoneal glands, the inguinal glands, the Fallopian tubes, the uterus, the stomach, the liver, the periosteum of the ribs.

Clinical features. — The results of operation for these tumours are very unfavourable. If large their removal is so difficult and dangerous, and the patient generally so cachectic, that the surgeon seldom attempts it. But even when the tumour is small, when at the time of operation no growths can be seen on the peritoneum, and no metastatic growths elsewhere detected, and the tumour is completely removed, recurrence may take place within a year. From these tumours papillary outgrowths may grow through the base of the cysts into the broad ligaments, thereby making the operation more dangerous, and complete removal of the tumour impossible.

If such a tumour is tapped, it is likely, from the ease with with which these papillary growths crumble down, that bits of growth, some too tiny to be noticed, will run out with the fluid. If some of the fluid happens to run into the peritoneum, these bits will adhere, and go on growing. Therefore, when you have to do with a small tumour evidently containing much solid growth, it is well not to tap it, but to remove it entire, enlarging the abdominal incision to the necessary extent.

Ovarian dermoids.—Dermoids are "tumours furnished with skin or mucous membrane occurring in situations where these structures are not found under normal conditions."

Dermoids are found in many parts of the body. In the practice of midwifery and gynæcology dermoids which are not ovarian occasionally have to be dealt with. Therefore

a statement of how and where dermoids occur may be useful. Bland-Sutton* classifies them as follows:—

(1) *Sequestration dermoids.* These are portions of surface epithelium separated, detached, *sequestrated* from the rest, owing to non-union of parts covered with skin that ought to have united. Hence they occur along the middle of the body; over the back (the post-anal dimple is a sort of rudimentary dermoid); on the male scrotum; on the sternum; in the mediastinum; on the chin; in the angles of the orbit, chiefly the outer angle; on the nose; on the palate; on the scalp; over the fontanelles; within the skull. Wherever there is during development a fissure in the parts covered with skin which should unite, if development be defective (often from a fold of amnion getting in the fissure), one of three things may happen:—(*a*) the fissure may persist (hence cleft palate, and similar deformities); (*b*) it may close imperfectly and leave a recess or puckering of the skin (hence the post-anal dimple); (*c*) portions of surface epithelium may be included, sequestrated, and form *dermoids.*

(2) *Tubulo-dermoids.* There are certain canals in the fœtus which ought to disappear before birth. These obsolete canals may get closed at their ends and form dermoid cysts. They are (A) the thyro-glossal duct, persistence of which causes:—(*a*) dermoids of the tongue; (*b*) median cervical fistulæ; (*c*) accessory thyroids. (B) A pouch at the back of the pharynx, called the pouch of Rathke, which indicates where a canal at one time ran from the third ventricle of the brain into the pharynx, the pituitary body being between them. Out of this fœtal relic a dermoid in the situation of the pituitary body may develop. (C) In early fœtal life, the central canal of the spinal cord and the alimentary canal are continuous. (D) The invagination of skin which forms the anus joins the gut in front of the point where it joins the canal of the spinal cord; the part of the gut behind this invagination is called the post-anal duct; it ought to disappear, but part of it may persist, get sequestrated, and thus a rectal or rather post-rectal dermoid may result. (E) The three lower branchial clefts (the upper of which is the Eustachian tube) may not be closed. Four kinds of non-closure occur:—

* Bland-Sutton on "Dermoids."

(*a*) persistence as a complete fistula; (*b*) as a fistula having an external opening only; (*c*) as a fistula having an internal opening only; (*d*) the fistula may be closed at each end, and the middle part persist as a dermoid.

(3) *Ovarian dermoids.* Embryologists state that the ovary is developed out of the same embryonic layer as the mucous membrane of the alimentary canal. This being so, it is not surprising that glandular structures should be found in the ovary of the same kind as those which occur in mucous membranes. The ovary is therefore a modified mucous gland; its follicles, as Sutton puts it, are mucous crypts. No sharp line can be drawn between skin and mucous membrane. In the same ovary * different cysts may be found, one set containing skin, hair, sebaceous glands and teeth; others presenting only clusters of mucous glands and mucous cysts; and a third set indistinguishable from ovarian follicles. That which is peculiar to the ovary is the extraordinary power of growth which ovarian dermoids have in common with other ovarian tumours, so that in it cutaneous structures are produced in number and variety not known elsewhere. Hence ovarian dermoids are now classed as teratomata.

Anatomical characters.—Ovarian dermoids may be lined with skin throughout, or only over a very small area. The skin may be bald, or it may have hair, sebaceous glands, sweat glands, mammæ, mammæ without nipples and nipples without mammæ. There may be teeth (as many as 300 have been found in one cyst), muscle, bone, horn, nails; very rarely brainlike tissue (Fig. 219). Although there are these tissues, no properly formed organs ever occur in dermoids. Ovarian dermoids may grow very big; one has been recorded weighing 160 lbs.

In the lower animals dermoid cysts are found which contain feathers, wool, or bristles. The hair in dermoid cysts is longer in ovarian cysts than in any other. It is generally of light colour, not always like that of the patient's head. Mammæ are found in ovarian cysts only; teeth are found only in rectal and ovarian cysts and in those formed in the branchial clefts. The cavity of a dermoid cyst is

* Bland-Sutton on "Dermoids," p. 120.

generally filled with fluid fat, which, when it has had time to cool, becomes solid like butter. In a few cases the fat is in little round pellets (Fig. 220); this probably (as Doran * has suggested) depends upon some peculiarity in the chemical composition of the fat; at least its melting point is higher. The wall of a dermoid is generally thick; it does not commonly show the pearly lustre of a multilocular cyst. It is composed of fibrous tissue, and between this and the skin which lines the cyst there is often cellular tissue with fat. Dermoids are generally unilateral.

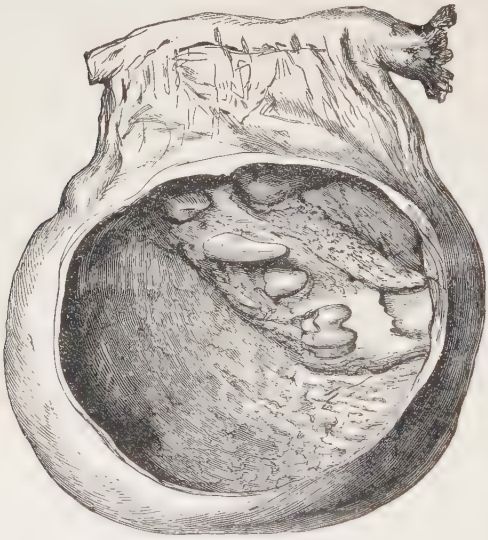


Fig. 219.—Dermoid cyst of ovary. (*After Doran.*)

Clinical features. — Dermoids grow slowly; they may remain of the same size for years. Hence in the days before ovariotomy it sometimes happened that the prediction that a tumour, believed to be ovarian, would go on growing, was not fulfilled. But we cannot distinguish, while it is in the body, a dermoid from tumour of another kind; and a dermoid may cause danger even if it be not getting bigger.

Dermoids occur at all ages. They are found more often during childhood than other ovarian cysts; so that in childhood dermoids are the most frequent kind of ovarian cyst, though the majority of dermoids are found in adults. Statistics only show when the dermoids were found out, not when they began to grow.

Dermoids have been found in the peritoneal cavity when the ovaries were healthy. Bland-Sutton has met with one

* "Obst. Trans.," vol. xxxvii.

attached to the cæcum*; and I have removed one from the mesentery. They have also been met with in the cellular tissue of the pelvis under the peritoneum. I have had one such case: and another is figured by Clarence Webster.†

Dermoids suppurate more often than any other kind of ovarian cyst. This probably depends upon their slowness of growth, which makes them stay long in the pelvis, where they are liable to bruising during childbirth. When they sup-

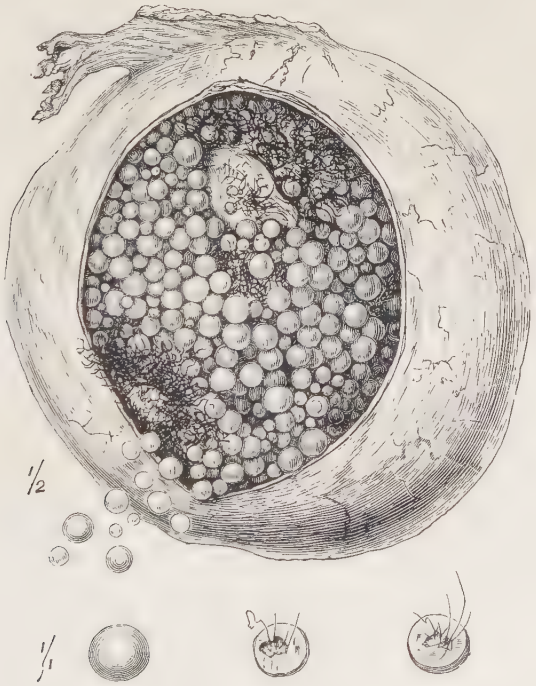


Fig. 220.—Ovarian dermoid containing epithelial balls. (*After Bland-Sutton.*)

purate, their pus is very infective to the peritoneum. Hence if a dermoid is tapped during operation, and the contained stuff runs into the peritoneum, peritonitis will follow, unless the operator is careful to clean the peritoneum. Therefore, it is well if possible to remove dermoids entire, without tapping them.

Dermoids, when inflamed, often become firmly adherent in the pelvis, and they may point and burst, or be opened because the swelling is taken for an abscess. If the dermoid burst

* *Clinical Journal*, 1902. † Atlas of Female Pelvic Anatomy.

externally (a rare event) or is opened, the patient will be left with a sinus which will go on discharging for the rest of her life. If it burst into the bladder, it will set up and maintain cystitis. If into the rectum, discharge and irritation of bowel will be continuous. If into the vagina, it is more accessible to treatment. If the cyst is emptied of hair and any pedunculated masses that it may contain, it will contract, and although it will continue to discharge, this will not be distinguishable by the patient from whites. If the cyst be large and contain solid contents which prevent it from contracting, the discharge may be so profuse as to exhaust the patient by hectic, or lead to lardaceous disease. The troubles which in these ways result from a suppurating dermoid can only be cured by removal of the cyst.

Practical rules as to ovarian cysts.—From the clinical features that have been detailed, some practical conclusions follow.

First, when an ovarian tumour has been discovered, there should be no delay in its removal. So long as a patient has an ovarian tumour she is liable to the accidents of twisting of the pedicle and rupture of the cyst. While a cyst is small you cannot be certain of its nature. It may be a papillary adeno-carcinoma, and if so delay may make its removal impossible.

Second, if the tumour be a papillary adeno-carcinoma, tapping it may lead to the dissemination of cancer over the peritoneum. If a dermoid tumour, especially if suppurated, is tapped, and some of the fluid runs into the belly, acute peritonitis may follow. Hence when operating, always examine a tumour before you tap it. If it has not the pearly lustre of a multilocular cyst, if its wall is very thick, if solid lumps can be felt in it which do not look like secondary cysts, if it is intra-ligamentous and partly solid, do not tap it. Enlarge the incision and remove the tumour unopened.

Third, knowing how often papillary tumours are bilateral, you may, when removing such a tumour, save the patient the anxiety and suffering of another operation by removing the other ovary as well. In all ovariotomies on patients so old that their ovarian function is at an end, both ovaries should

be removed. If the patient be young, the possible necessity of double oöphorectomy should be explained to her before the operation. If the tumour is a multilocular cyst, and there is a small cyst in the other ovary, this small cyst may be cut out and the remainder of the ovary sewn up and left. But if the cyst is papillomatous the other ovary should be removed entire, for you cannot cut out the hilum.

Solid ovarian tumours.—Between 98 and 99 per cent. of ovarian tumours are cystic; only between 1 and 2 per cent. solid. Solid tumours do not get so large as the cystic and they are more irregular in shape. The outward pressure of fluid equally in all directions tends to make cystic tumours approach the spherical shape; but solid tumours more often preserve the natural shape of the ovary. Solid tumours less often excite inflammation and are therefore less often adherent. They often have broad pedicles.

The solid tumours of the ovary are fibroma, myoma, sarcoma and cancer.

Fibroma of the ovary.—This is rare. It is not possible to give a statistical statement of its frequency, for such a statement should be based only on cases examined microscopically by competent observers using modern methods; and enough such material has not yet been published. Most of the old cases put on record as ovarian fibroids were probably sarcomata.

There is also another source of error, which is, that a fibroid lying near the uterus, and taken to be an ovarian fibroid, is difficult to distinguish, unless carefully examined before removal from the body, from a uterine fibroid the attachment of which to its parent organ has become long and slender. Nevertheless, some cases have been published by competent observers in which it was indubitable that the tumour was ovarian, and composed of white fibrous tissue; and some of these tumours were large, 9 lbs. and upwards.

Certain cases in which the ovary has been found enlarged to the size of a goose's egg or less, fibrous and tough, have been described as results of oöphoritis,* it being supposed that the ovary has become enlarged from the organisation of inflammatory lymph. But I know of no good reason for this

* By Kiwisch, "Dis. of Ovaries"; also "Obst. Trans.," vol. xxx.

interpretation of their origin. So-called "chronic ovaritis" is very common, and if it led to fibrous enlargement of the ovaries, this ought to be much commoner than it is. I know no difference, except in size, between these small fibrous enlargements of the ovary and the larger ones which every one calls tumours. Doran* thinks that cysts may develop out of what he considers to be inflammatory enlargement of the ovary; but apparently only on the ground that he has seen a cyst on one side and a large fibrous ovary on the other. I have referred to this subject at p. 76.*

A fibroid tumour of the ovary may affect the whole ovary or only part of it. In the latter case it forms a hard, rounded, smooth nodule or bundle of nodules, sharply defined, but closely attached to the ovarian tissue. It may be polypoid. The remainder of the ovary is generally indurated, with few follicles. The fibroid is composed of white fibrous tissue, with a few smooth muscle fibres, interlacing without definite order. They have few vessels. A few cases have been described in which fibroids seem to have grown in the corpus luteum; the grounds for this view being that the tumour was surrounded with a yellow layer of matter, and that in its centre were remains of blood clots.

Degenerations. — Ovarian fibroids sometimes contain "cysts," that is to say, cavities filled with pulpy broken-down tissue, but without epithelial lining. They may contain dropsical follicles and they may calcify.

Clinical features.—Ovarian fibroids are more frequent, in proportion to cystic growths, in children than in adults. They grow slowly and we know nothing of what regulates their growth. They are often associated with ascites, which does not return after the tumour has been removed; but we know not how the ascites is produced. The ascites often leads to the discovery of the tumour. Ovarian fibroids are so rare that they are very seldom distinguished before operation from other tumours which clinically resemble them. They are seldom bilateral.

Patenko's bodies.—Small, round, fibrous nodules, formed out of burst or atrophied follicles, are found in the ovaries,

* *See* Fairbairn and others, "Obst. Trans.," May, 1902.

and are called *Patenko's bodies*, after their describer. They indicate retrogression; sclerosis, not growth. Tumours never develop from them.

Myoma of the ovary; that is, a solid ovarian tumour composed of unstriped muscular fibres (Fig. 221). Such tumours are, according to Bland-Sutton,* commoner than ovarian fibromata. The fewness of well-examined cases prevents any exact knowledge of their relative frequency. I know no criteria by which the unaided senses can distinguish myoma of the ovary from a fibroma or a sarcoma. It is difficult with the microscope to distinguish between a myoma and a spindle-celled sarcoma. Even an expert microscopist may be unable to decide until assisted by the clinical history. Clinically, ovarian myomata cannot be distinguished from other solid ovarian tumours. Myomata do not recur.

Fig. 221.—Myoma of ovary. From nature. (*After Doran.*)

Sarcoma of the ovary.—Sarcoma of the ovary is generally spindle-celled. In some cases round cells are mixed with the spindle cells, but pure round-celled sarcoma is rare. Some of these tumours contain fibrous tissue; these are called fibro-sarcoma and form a transition between sarcomata and fibroids. Bland-Sutton has found sarcomatous tissue in some dermoids; a transition form between sarcomata and cysts. In describing ovarian papillomata I have mentioned that in some papillomata the growths consist of gland tissue mixed with sarcomatous tissue. These are called adeno-sarcomatous papillomata. Some sarcomata Leopold has found to contain glandular tissue near the hilum, and these therefore are called adeno-sarcoma. Spiegelberg has described a sarcoma of the

* "Surgical Diseases of Ovaries and Fallopian Tubes," p. 72. *See* also Doran, "Obst. Trans.," 1902.

ovary in which at some places the structure was that of cancer, hence called "sarcoma carcinomatosum."

Ovarian sarcomata are solid tumours, generally smooth on the surface, though papillary growths have been seen. On section they are red: sometimes pale red, sometimes a deeper red. They may get as big as a child's head or more. In their older parts these tumours are liable to fatty degeneration, marked by yellow points, coalescing into lines and then breaking down into cavities. Tumours containing many such cavities have been called cysto-sarcoma. The cavities may vary in size from that of a walnut to that of an orange. The fatty degeneration may lead to thrombosis of veins returning the blood from the tumour. Such thrombosis may lead to hæmorrhage into the tumour which may cause rupture of the tumour, to death of the tumour, and in either of these ways to peritonitis.

The main characteristic feature of these tumours is that they produce secondary growths. According to Klebs, spindle-celled tumours have the least tendency to produce secondary growths, adeno-sarcomata the most, round-celled sarcomata being in this respect between them.

Clinical features.—Sarcoma of the ovary is especially frequent in the young. It has been seen in the fœtus. In children a larger proportion of ovarian tumours is sarcomatous than in adults. These tumours are often bilateral; according to Bland-Sutton,* in about 50 per cent. In this feature sarcoma of the ovary differs from sarcoma elsewhere.

The rate of growth is variable: sometimes slow, but sometimes fast; especially if pregnancy be present. There is often ascites. Sarcoma of the ovary does not cause peritonitis, nor adhesions, till it reaches a great size. Secondary growths often do not occur till late. Hence, except when very large, the removal of sarcoma of the ovary is generally easy, and there is a good prospect of cure by removal.

Endothelioma of the ovary.—There is a peculiar tumour of the ovary which histologically holds an intermediate place between carcinoma and sarcoma. It is nodulated, soft, generally smooth (but may have villous processes) outside. On

* "Surgical Diseases of the Ovaries and Fallopian Tubes," p. 43.

section it looks spongy, being riddled with small cavities. The cavities are separated by fibrous bundles and contain epithelial growths; and in this respect the tumour resembles cancer. But the epithelial outgrowths can be traced developing from connective tissue; and in this respect the tumour resembles sarcoma. They are believed to develop out of the endothelium of lymphatic spaces. Hence Leopold calls them "*lymphangioma kystomatosum*"; Kolaczek, "*angiosarcoma*"; Pomorski, "*endothelioma ovarii.*"* Some of the cavities contain myxomatous tissue, hence the still longer name, "*endothelioma cysticum myxomatodes ovarii*" (V. Velits).* Clinically, these tumours are a variety of cancer. Their special interest is for the histologist. They further illustrate the extraordinary variety of new growths that are found in the ovary.

Cancer of the ovary.—Cancer of the ovary is fortunately less common than cystic disease. If we take all cases in which at some part of a cystic tumour there is a little growth showing the microscopic structure of cancer, then cancer of the ovary is common. Solid tumours composed entirely of cancer are less common: and may be either primary or secondary; more often the former. Cancer of the ovary is often bilateral. It most often is what used to be called "*medullary*" cancer; that is, soft and rapidly growing; forming a diffuse growth occupying the whole ovary. The follicles are at first unaffected, later they are invaded by the cancer and destroyed. Such a cancer forms an uneven lump, seldom bigger than a man's head, which on section shows a dirty-white marbled appearance, and is easily broken down. In some cases the cancer grows more slowly, and much fibrous tissue is produced, so that without the microscope it is hard to distinguish such tumours from fibroid growths. Such tumours grow more slowly, and therefore do not get so large as the softer ones. In the old nomenclature they used to be called "*scirrhus.*" They are not often bigger than a fist. In *colloid* cancer the ovary forms a tumour, seldom larger than a man's head, which on section is full of little cysts, most of them about the size of a hempseed, which contain colloid matter. In the ovarian tissue epithelial nests are

* "Zeit. für Geb. und Gyn.," Bd. xviii.

found. These are interesting tumours, because they stand midway between solid cancerous tumours and cystic tumours. Some writers have classed them with one, some with the other.

Clinical features.—Cancer of the ovary may occur at any age, but is proportionately more frequent in the young, below twenty, and the old; so that it does not seem to depend so much as other ovarian tumours upon the functional activity of the organs affected. We know no more about its cause than we do about that of cancer anywhere else. It grows slowly in the beginning, faster as it gets bigger. Amenorrhœa is often an early symptom. Later there is pain, partly from the growth nipping nerves as it extends, partly from peritonitis. Ascites develops while the tumour is yet small and recurs if the belly be tapped. Œdema of legs occurs early, but not so soon as ascites. Later there is cachexia.

Death may take place by gradual wasting and exhaustion, by peritonitis, by pulmonary embolism, or by the effects of secondary growths in peritoneum, lymphatic glands, liver, spleen, bowel, stomach, lungs, pleura, bone, or elsewhere.

The only treatment of an ovarian tumour which seems cancerous is to give the patient the benefit of the uncertainty of diagnosis, and make an exploratory incision. If the tumour be found to have invaded neighbouring parts, or if secondary growths are perceived, nothing can be done but to let off ascitic fluid. But if the tumour is limited enough to be removed, and no secondary growths are found, the tumour should be removed, even though the naked-eye characters suggest that it is cancer; and knowing that cancer is often bilateral, the other ovary should also be taken away.

Peritoneal growths secondary to ovarian tumours.—I have referred to certain of these in describing the tumours whence they come.

If a multilocular cyst is incompletely removed, so that a little cyst or cysts be left in the pedicle, or adherent to bowel or belly wall, such a little bit of the tumour may grow and, if not treated, form a second tumour as big as

the first.* This seldom occurs, because operators take care to prevent it.

If a papillomatous cyst bursts, or is so tapped that the fluid runs into the peritoneum, little bits of papillary growth are apt to be broken off and carried into recesses between bowels, where they stick and, being small, escape notice. Here they may grow, just like the parent growth. In some cases the abdomen has been opened and a papillomatous cyst with many secondary growths on the peritoneum has been found. The cyst has been removed and the belly closed, the growths on the peritoneum being left there. In some of these cases the patient has remained well for years. The probable explanation is, that the growths were papillary non-malignant adenomata, that, like non-malignant adenomata elsewhere, they grow to a certain size (how regulated we know not) and then stop growing, and possibly undergo fatty or calcareous degeneration and dwindle.

In other cases the peritoneal growths are malignant; they go on growing, causing ascites, cachexia, metastatic growths elsewhere, and death. We know not how to distinguish, before removal, between adenomatous and carcinomatous papilloma.

In cancer of the ovary the growth, like cancer elsewhere, invades all tissues, and causes secondary growths, and some of these are generally on the peritoneum.

Myxoma of the peritoneum.—There is a rare and ill-understood intra-peritoneal growth which sometimes follows ovariotomy. In this disease the belly contains free jelly-like masses of myxomatous tissue; similar masses, some looking like cysts, adhere to the peritoneum covering the bowels; and in some there has been myxomatous degeneration of the omentum and the sub-serous connective tissue. As the disease is not a definite tumour but a diffuse degeneration, some think the word "myxoma," which usually implies a tumour, is unsuitable, and they call the disease "pseudo-myxoma" (Werth). There are always with it adhesions, and Strassman (who has written the latest and best paper about it†) calls it "*peritonitis pseudo-myxomatosa.*" The

* *See* Audry, "Annales de Gynécol.," 1890.

† "Zeit. für Geb. und Gyn.," Bd. xxii.

myxomatous tissue grows fast, reaching a great size within six or twelve months. The belly may or may not fluctuate, but if it be tapped, which ought not to be done, no fluid runs out. The only treatment is to open the belly and remove the myxomatous stuff, and the sooner this is done the better the prospect. The risk of operation is greater than that of a smooth ovariotomy, because adhesions have to be torn through, and there is therefore danger of bleeding, and also of the subsequent oozing into the belly which favours the multiplication of microbes. Some cases are cured, in some the myxomatous growth recurs after removal. Not enough cases have been published on which to base any statement as to the mortality of the operation or the probability of recurrence.

We know little about the pathology of this condition. It seems to be commoner in multiparæ and between the ages of forty and sixty. This statement is based only on a small number of cases. The only case I have seen was in a virgin under forty. One-third of the recorded cases have followed rupture of ovarian cysts. Two theories of its origin have been suggested:—(*a*) that it springs from the original tumour, either from a bit left behind at the operation, or from some of its tissue that got into the peritoneum owing to tapping or rupture; (*b*) that it is a growth of the peritoneum. The fact that it may be removed and not recur seems against the latter view. If the former be thought plausible, remember that myxoma of peritoneum is much rarer than the tapping or bursting of tumours; and that we know not which tumours, when tapped or burst, leave behind the tendency to myxomatous growth.

Ovarian tumours are liable to accidents, viz.:—

1. **Hæmorrhage into ovarian cysts.**—This may be great or slight. The frequency with which the fluid of large ovarian cysts is found coloured by admixture of blood shows that slight hæmorrhage into cysts is common. Such slight bleeding causes no symptoms by which it can be found out; therefore to assign causes for it is only to theorise. Probably when one cyst bursts into another the vessels in the septum bleed a little. Great bleeding into a cyst may take place without known cause external to the tumour. Papillary

growths are very prone to bleed, and may bleed much. A vein has been found opening into a cyst* and it has been thought that it gave way from the tension of the cyst wall. Intra-cystic bleeding from this cause is very rare.

The commonest cause of great bleeding into an ovarian cyst that has not been meddled with is *twisting of the pedicle.* As I shall describe this farther on, I here only mention that it causes bleeding into the cyst. Great intra-cystic bleeding has been caused by *tapping.* When an operator thrusts a trocar into a cyst that he cannot see, he may wound a big vessel, and great bleeding into the cyst follows. This is one of the risks that attend tapping; and its possibility is one of the reasons why you ought not to tap an ovarian tumour. Great bleeding into a cyst is recognised by sudden onset of the following symptoms:—(1) the symptoms and signs of bloodlessness—pallor, small quick pulse; (2) absence of external hæmorrhage; (3) pain in belly, with enlargement of tumour, which is well defined, hard, tense, round; thus showing that the enlargement is due to presence of fluid within it.

2. **Suppuration of ovarian cysts.** — This is caused by micro-organisms. Sometimes it is easy to say how they got in, as when a cyst is tapped with a dirty trocar. When an ovarian tumour is obstructing delivery, and ovariotomy cannot be done, some have thought it proper to tap it. A tumour thus tapped is likely to suppurate, not only because in his haste the operator may forget to cleanse his trocar, but because in delivery the tumour will be bruised, and microbes thrive better in damaged tissues than in healthy ones. Whether bruising without tapping will make a tumour suppurate is doubtful.

Suppuration without known injury is very rare in simple multilocular or papillomatous cysts. It is especially common in dermoids, we know not why. It is supposed that microbes may penetrate them from the bowel, on account of the frequency with which suppurated cysts are found closely adherent to bowel. This explanation serves for want of a better. The reason why the bowel microbes specially often invade dermoid cysts may be that dermoids remain stationary

* Olshausen, op. cit.

in size, and lodged in the pelvis, for such long periods. Dermoids are for this reason specially apt to be bruised in parturition and inflamed afterwards.

Suppuration of an ovarian cyst is sometimes marked by a rigor or rigors, followed by hectic fever and wasting. Until the peritoneum is involved there is little or no pain; but when the tumour has become adherent there is often severe and continuous pain, which may need large doses of morphia to relieve it. In many cases the temperature is not raised; therefore absence of fever is no proof that a tumour is not a suppurated cyst. Whether such cases are without fever in the beginning I know not.

When these cases are seen after the suppuration has lasted long, the main symptoms are those of chronic peritonitis; and the physical signs those of perimetritis with a large lump. The only cure of a suppurated ovarian cyst is its removal.

3. **Twisting of the pedicle.**—This was first well described by Rokitansky; later, and more fully, by Mr. Lawson Tait and Mr. Knowsley Thornton.* Olshausen† has computed that it occurs in about 8 per cent. of tumours; Thornton in 9·5 per cent. It is produced mechanically and generally slowly. One cause is the alternate filling and emptying of the rectum. The rectum when full pushes forward one side of the tumour. When the bowel is empty the tumour does not go back, but the rectum comes to lie against a different place, and pushes this forward next time it fills; and thus by many small movements complete rotation or rotations are produced. Lawson Tait finds that twisting of pedicle is more frequent with right-sided tumours, in which the rectal pressure, being applied farther from the attachment of the tumour would act to greater advantage, and that the direction of the twisting is that which the rectum would give. I think this cause is an adequate one and therein differ from Olshausen. The latter author also objects that Tait's cases are too few, and this objection is forcible; but I know of no collection of cases sufficient to disprove Tait's reasoning. Thornton thinks it due not alone to the rectum, but to other parts

* *American Journal of the Medical Sciences*, vol. 96, 1888.

† Op. cit.

of the bowel also. Olshausen thinks the most frequent cause of pedicle twisting is unequal growth of different parts of a tumour. Obviously, bulging of one cyst in a multilocular tumour will push the rest of the tumour in a contrary direction. Were this the usual cause, pedicle twisting should be common in multilocular cysts; but it is not. It is proportionately more frequent in dermoids than in any other kind of tumour. Another explanation is that an intra-pelvic tumour may be hindered from rising into the abdomen by the overhanging promontory, the resistance of which may make the tumour rotate round it. Changes in the position of the body, sudden or prolonged exertion, leading to pressure on the tumour, may alter its position and twist its pedicle. During examination, a very mobile tumour may easily be rotated. In pregnancy, the pressure of the growing uterus on an ovarian tumour may turn it round; and still more easily may this be done in the manipulations of the belly which follow delivery. The lessening in size of a tumour which follows tapping increases its mobility, and thus makes it more easily turned round by agencies such as those I have mentioned. The presence of ascites, and great length of the pedicle, make a tumour more easily turned round. The essential condition is mobility, which usually implies smallness, of tumour. Pedicle twisting seldom occurs with a big tumour, and never with a fixed one.

Freund has formulated a law of torsion. He points out that there are two stages in the growth of ovarian tumours. In the first stage they are pelvic and lie behind the uterus, the pedicle of the tumour being in front. In the second they rise into the abdomen, and then the pedicle comes to lie behind the tumour and to be twisted; in right-sided tumours being twisted to the left, in left-sided tumours to the right. This rotation may be prevented or counteracted by various conditions, such as adhesions. I do not know that other observers have confirmed this by many observations.*

Effects of pedicle twisting.—When the pedicle is twisted the vessels in it are compressed. The veins having thinner walls are sooner blocked by this compression than the arteries. Hence the return of blood from the tumour is

* *See* Simpson, *Ed. Med. Journal*, August, 1894.

hindered, and pressure within the veins behind the obstruction increased; therefore vessels give way and bleed. The bleeding is into the cavity of the cyst, into the cyst wall, and into the pedicle on the distal side of the twist. The ultimate effects of the twist depend upon the suddenness and the degree of the obstruction to the circulation.

The following results may happen:—

(1) Enough blood may be poured into the cyst to kill the patient; or the cyst may burst, and bleeding go on into the peritoneal cavity till the patient dies.

(2) Venous congestion of the cyst wall and pedicle may make these tissues thick, soft, greyish, liver-coloured, or black, according to the amount of extravasated blood with œdema. From this follows (*a*) that when the surgeon removes the tumour he may find the pedicle break down under the ligature; (*b*) the circulation through the pedicle may stop; the tumour may become inflamed, adhesive lymph connect it to surrounding parts, new vessels form in the adhesions and nourish the tumour, and the tumour may become detached from its original pedicle (Fig. 222). Halliday Croom* has published a case in which he found an ovarian cyst lying free in Douglas's pouch, without attachment of any kind. Such separation is more frequent with dermoids than with any other abdominal tumour.

(3) A less degree of twisting may narrow the arteries and lessen the amount of blood going to the tumour. The tumour may in consequence cease to grow, its walls undergo fatty and calcareous degeneration, and even part of its contents may be absorbed and the tumour get smaller. This imperfect natural cure has been watched by competent observers.† It is so rare that its possibility ought not to influence treatment.

(4) When pedicle twisting does not cause such bleeding that the patient either dies or is cured by operation, the next effect is usually peritonitis. This may end in the formation of adhesions by which the tumour may acquire fresh sources of nutrition.

(5) Extensive adhesions to bowel may have a less beneficial effect. They may lead to the entry of micro-organisms,

* Edin. Obst. Trans., 1896–7, p. 33. † *See* Olshausen, op. cit.

and to suppuration of the tumour, with or without decomposition and fœtor of the pus.

(6) A tumour with a twisted pedicle which has become adherent to bowel may be again moved by the cause which produced the twisting. If so, the bowel as well as the tumour may be twisted, and intestinal obstruction follow. Twisting of the pedicle also shortens it, and this shortening has been known so to tether a tumour down on the pelvic brim that pressure on the bowel, not present before the twisting, caused obstruction.

(7) A few months' dysmenorrhœa has been observed to precede sudden pedicle twisting. It has been supposed that a slight turn in the pedicle, not enough to cause trouble at ordinary times, may yet, under the influence of the menstrual congestion, lead to painful congestion.

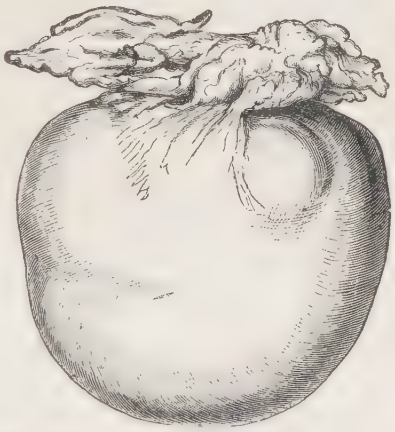


Fig. 222. — Dermoid cyst twisted off its pedicle and receiving its vascular supply from the adherent omentum. (*After Doran, from the Museum of the Royal College of Surgeons, Pathological Series, No.* 4,549.)

(8) Lastly, there are a few recorded cases which lead to the opinion that a twisted pedicle may become spontaneously untwisted. There have been symptoms such as twisting of the pedicle produces: the belly has been opened, the condition of the tumour has been like that which results from pedicle twisting; but there has been no twist.

Twisting of the pedicle thus endangers life in three ways: (1) by internal hæmorrhage; (2) by peritonitis; (3) by exhaustion from suppuration. Olshausen has known death from pulmonary embolism, but I do not see how twisting of the pedicle should make the patient more liable to this accident than any other anæmic subject. He also has seen persistent pain and increasing cachexia. I should have inferred suppuration from such a clinical course; but Olshausen does not say whether or no this was present.

Diagnosis of pedicle twisting. — The consequences of pedicle twisting can be diagnosed easily; not so the fact. If a patient who has an ovarian tumour is suddenly taken ill, with pallor, small, quick pulse, but no external bleeding, and the tumour becomes larger and tense; if after such symptoms, those of peritonitis develop; or if a patient with a tumour begins suddenly to suffer pain and look ill, and the tumour becomes tender and harder, you may safely infer that an acute change is present in the tumour, and that twisting of the pedicle may be the cause. Certainty that the pedicle is twisted cannot be got till you have seen it.

If there is reason to think that pedicle twisting is present, the tumour should be removed with as little delay as possible. When you have to do with a tumour, and grave symptoms indicate an acute change in it, even if your supposition that the change is due to twisting of pedicle be incorrect, the right thing is to operate. No benefit, but only further ill can come from delay. The removal of a tumour with a twisted pedicle is attended with more danger than that of one the tissues of which are normal; and the longer operation is postponed the greater the danger.

4. **Rupture of ovarian cysts** is not uncommon. They may rupture either spontaneously or from external violence. Spontaneous rupture is most common in small cysts; in cysts of the broad ligament; in single ovarian cysts; and especially in the smaller cavities, containing colloid stuff, of the glandular multilocular tumours. It is commoner in small cysts because their walls are thin. It seems as if they burst from over-distension at their thinnest point, just as a Graafian follicle bursts. Big cysts are generally thick-walled. Rupture may also take place from one of the degenerations to which ovarian tumours are liable: from thrombosis, fatty degeneration, or sloughing. It may be caused by hæmorrhage into the cyst suddenly increasing the tension within it. Suppuration may lead to bursting. But as inflammation commonly first leads to the formation of adhesions, such bursting is seldom into the peritoneum; usually into a mucous cavity, generally bowel, because this mucous tract is more extensive than any other.

A very important kind of rupture is that caused when

papillomatous growths within a cyst grow up to, and perforate its wall. Here the opening is small, so that no symptoms accompany its formation; but it allows leakage from the cyst and infection of the peritoneum by particles of growth.

The production of rupture by external violence needs no explanation. It may occur from a blow; from compression of the belly; from manipulation during examination; or during labour, from compression between the abdominal walls and the uterus, or between the child and the pelvis.

Consequences of rupture.—These need only here be briefly recapitulated. They depend on where the tumour bursts, and what comes out of it. Rupture may open a big vessel and cause fatal hæmorrhage. Rupture of a broad ligament cyst is harmless and may cure. Colloid stuff causes injection and thickening of the peritoneum, but no acute symptoms. A tumour which has suppurated or degenerated, so that dead matter gets into the peritoneum, will cause peritonitis: so often does the sebum which dermoids contain. Rupture of a papilloma leads to inoculation of the growth in the peritoneum; with consequences depending on the kind of growth.

There are other places into which ovarian cysts may rupture. Next to the peritoneum comes the bowel; usually the large intestine, most often the rectum. Occasionally this results in cure. More often it leads to hectic fever and death by exhaustion. Bursting of ovarian tumours into the stomach or small bowel has been recorded; but such cases are clinical curiosities. A tumour may burst through the abdominal wall. It has been known to project at the umbilicus and dilate the umbilical ring. Ovarian tumours have burst into the vagina and into the bladder. I have spoken of this in describing dermoid cysts. Lastly, an ovarian cyst may become adherent to the Fallopian tube and burst into it, and thus a tubo-ovarian cyst be formed.

It is not possible to estimate the proportion of cases in which bursting of an ovarian cyst kills, because the only cases in which the fact of rupture is indisputable are the fatal ones. When no harm follows the rupture, it is often only found out afterwards at an operation; and possibly in other cases not found out at all.

The diagnosis of rupture of an ovarian cyst can only be made by finding that the tumour has disappeared. Confirmation will be given if there are signs of internal hæmorrhage, of peritonitis, or discharge having recognisable characters (colloid, fatty stuff, hair) from bowel, vagina, or bladder.

CHAPTER LVI.

CLINICAL HISTORY OF OVARIAN TUMOURS.

Early symptoms.—Ovarian tumours are generally found out when the patient notices that her belly is enlarging, not before. In a few cases I have known small ovarian tumours accompanied with persistent aching pain in the affected part, without adhesions or any signs of inflammation in the tumour to account for it. Ovarian tumours, except malignant ones, do not affect menstruation; although menstrual irregularities of all kinds may co-exist with them.

When ovarian tumours are large enough to cause symptoms, these are of three kinds:

1. **Pressure symptoms**: mechanically produced as the tumour gets bigger. Ovarian tumours cause pressure symptoms in one of two places: (*a*) the pelvis, and (*b*) the abdomen. (*a*) A small tumour may get incarcerated below the sacral promontory, and thus be prevented from rising up into the abdomen. When thus held down, it may push the uterus against the *urethra* and neck of bladder, producing, first, frequency of micturition, and then retention of urine. It may press on the *rectum*, obstruct the passage of solid fæces, and cause straining at stool: straining which has the effect of forcing the tumour lower down and thus increasing the difficulty by which the straining was provoked. It may press on *sacral nerves*, and thus cause pain down the thighs, and on *vessels* in the pelvis, thus causing œdema of vulva and vagina; although pressure to the extent of causing the latter phenomenon is rare. (*b*) When the tumour has risen out of the pelvis, pressure symptoms do not occur until the tumour has got very big. When it has got the size of a uterus at the full term of pregnancy, it presses on the *stomach*, and thus causes discomfort after food, and perhaps vomiting. It also presses on the *diaphragm*, and thus makes the patient short of breath, and subject to palpitation on exertion. By

raising the *general intra-abdominal pressure*, it makes more difficult the flow of blood through the inferior vena cava, and thus causes œdema of the legs, vulva, and lower abdominal wall: it also leads to a condition of kidney like that found in chronic heart disease; the kidney being tough and leathery, the urine scanty and containing a little albumin. Pressure on the *ureters* has been observed, leading to hydronephrosis; but this is rare. Umbilical *hernia* is another occasional consequence of the raised pressure in the belly. Hæmorrhoids, varicose veins, and œdema of legs are, however, less frequent than in abdominal distension of the same amount due to pregnancy. The stretching of the *skin* leads, like that of pregnancy, to the formation of atrophic lines in it.

2. **The complications** of ovarian tumours lead to symptoms. The most frequent is peritonitis. Local adhesive peritonitis does not always cause suffering enough to make the patient lie up and send for a doctor; and therefore the absence of any history like that of inflammation within the belly is no guarantee that extensive adhesions are not present. In tumours that have not undergone degeneration or accident peritonitis is rare until the tumour reaches into the upper half of the belly. When it has got this size, it presses continuously upon parts in contact with it. Its pressure is most constant in front, where it is either in contact with the abdominal wall or, as is usual, separated from it only by omentum. The endothelium gets rubbed off the adjacent surfaces, or killed by pressure, and adhesions form. Hence the most common adhesions of ovarian tumours are with the omentum. As the tumour enlarges, a similar process may go on at other places, or inflammation may extend, and thus adhesions form between the tumour and other abdominal viscera.

The effect of adhesions in causing operative difficulties has been alluded to above. There are other effects. (*a*) *Pain.* Slight local peritonitis is often, but not always, without symptoms. The formation of adhesions can often be detected by local pain, tenderness, and friction appreciable by ear and hand. Extensive inflammation is attended by the usual symptoms of peritonitis. (*b*) When the bowel has become adherent there is risk of *intestinal obstruction*. It is rare in

comparison with the frequency of adhesions, but always possible. It is especially apt to happen if a tumour, already adherent to bowel, becomes rotated. (*c*) If a tumour becomes adherent in the pelvis, it may press upon the rectum or bladder, just as a tumour may which is incarcerated below the sacral promontory.

3. **Indirect effects.**—Ovarian tumours, when large, produce *indirect* symptoms. The direct effects of pressure on the stomach have been alluded to. (*a*) The interference with digestion thus caused may prevent the patient from taking, or from digesting, enough food, and if so she will waste. If there be much vomiting, she will waste fast. (*b*) The discomfort caused by a big tumour may prevent sleep, and thus lead to nervous exhaustion. This produces the drawn, worn expression of the face which, in days before local examination was practised systematically, used to be thought important in diagnosis, and called the *facies ovarica*. (*c*) The size of the patient's belly may prevent her from taking exercise, and long inaction may bring about fatty degeneration of the heart and other organs.

Ovarian tumours and pregnancy.—An ovarian tumour of any kind may complicate pregnancy. If any part of one ovary is so far unaffected by disease that Graafian follicles ripen in it, pregnancy is possible. Hence even in bilateral ovarian disease, so advanced that healthy ovarian tissue cannot be detected by the naked eye, the patient may become pregnant. Cases in which pregnancy is complicated with ovarian tumours show a larger proportion of dermoid cysts than occurs apart from pregnancy. There are three reasons for this: (1) Dermoids are especially frequent in young subjects, who are the more likely to become pregnant. (2) Dermoids grow more slowly, hence the period through which a patient with a dermoid incurs the risk of pregnancy is longer than is the case with a patient who has a faster-growing tumour. (3) Dermoids remain long in the pelvis. If the egg-bearing tissue has been lifted high in the abdomen by a large tumour, the ovum is less likely to get into the Fallopian tube than if the tissue from which it came were in the pelvis.

Consequences of pregnancy with an ovarian tumour.—

If pregnancy take place, there is a greater flow of blood to the pelvic organs, and this probably leads to faster growth of an ovarian tumour, if present. When an ovarian tumour and pregnancy are present together, the belly is bigger than with either condition alone. Hence pressure symptoms such as have been enumerated elsewhere are more severe. The induction of labour has been required to avert death from asphyxia. Nature does not step in to relieve these symptoms, for the tendency to abortion in pregnancies complicated by ovarian tumours is no greater than in pregnancies without them.

Labour with an ovarian tumour.—When labour comes, two kinds of effects may result:—(1) effects of the tumour on the labour; (2) effects of the labour on the tumour. (1) The effects of the tumour on the labour depend (*a*) upon whether the tumour is in the pelvis or in the abdomen; and (*b*) how big it is. If the tumour is in the pelvis it will get in the way of the fœtus, and obstruct delivery. If in the abdomen, and large, the distension of the belly will hinder the patient from bearing down and thus somewhat delay labour. It will also displace the uterus, generally pushing it to one side, and thus making its axis oblique; and from obliquity of the uterus obstetrical consequences follow, information about which will be found in books on midwifery. (2) The effects of labour on the tumour. During delivery the tumour may be squeezed between the head and the pelvis. This may burst it, or cause hæmorrhage into it, or make it suppurate. The effects of rupture, hæmorrhage, or suppuration have been described in the previous chapter. One remarkable case has been described, in which the tumour was pressed out through the anus, and there protruded, covered by rectal mucous membrane. An incision was made through this, and the tumour (a solid one) removed.* If the tumour be above the pelvis, its pedicle may get twisted, either by the patient's straining, by changes in her position, by the manipulations of the medical attendant, or by a combination of these influences. The same causes may also lead to its rupture.

Although all these bad effects may follow, yet they are not the rule. In the majority of cases of pregnancy with ovarian

* Lachapelle, "Pratique des Accouchements," tom. iii. p. 311.

tumour, the mother goes through childbirth and childbed without important injury.

Treatment of pregnancy with an ovarian tumour.—The proper treatment of an ovarian tumour complicated by pregnancy is its immediate removal. Thirty years ago the questions of tapping and of premature labour used to be argued as alternatives. The induction of premature labour is only proper if the tumour is malignant and its extirpation impossible, for then, by eliminating the pregnancy, the rate of growth of the tumour may be slackened. Ovariotomy must be done sooner or later, and experience has shown that the presence of pregnancy little, if at all, increases the danger. The fact that the growth of the uterus has gone on naturally is presumptive evidence that there are not extensive adhesions, and that the operation will be easy. Tapping is only proper if conditions are present unfavourable to ovariotomy, and yet immediate relief is wanted; such as fixation by adhesions in the true pelvis, so that in removal pelvic adhesions must be extensively broken down, which in pregnancy will cause dangerous bleeding; conditions in the patient such as cachexia, fever, or great dyspnœa; or, external to her, such as the absence of persons competent to do the operation and nurse the patient afterwards. In such circumstances tapping may be the lesser of two evils.

When an ovarian tumour is pressed by the fœtal head down into the pelvis, the first thing is to try to push it up, out of the true pelvis. Open the abdomen, press the uterus to one side, thus lifting the child's head out of the pelvis into an iliac fossa, and then let an assistant press the tumour from the vagina up out of the pelvis. Then remove it as in any ovariotomy. I have done this during the second stage of labour. Some think the best thing is to cut through the vaginal wall over the tumour, tie its pedicle, and remove it. In some cases the tumour has burst open the vaginal wall, and then has been successfully removed.* But vaginal oöphorectomy, especially under such circumstances, is more difficult than abdominal ovariotomy.

The rate of growth and the duration of ovarian tumours.—It is not possible to speak with precision upon this

* *See* Olshausen, op. cit.

point. Statistical tables bearing on these questions are vitiated by unavoidable errors. (*a*) It is impossible to say when an ovarian tumour began, because it is not noticed till it has reached a certain size. (*b*) Different cysts grow at different rates. Parovarian tumours and dermoids grow slowly, multilocular glandular tumours fast. It is impossible, before the belly is opened, to say what kind of ovarian cyst a patient has. The cases on which estimates of the duration of ovarian tumours are founded were all observed a long time ago, for nowadays every ovarian tumour that is seen by a competent doctor is removed. These old cases were not all well diagnosed. Hence it is that estimates of the duration of ovarian tumours vary from one year to fifty. Olshausen is probably correct in his estimate, that of patients with multilocular ovarian cysts probably two-thirds, if not cured by operation, die within three years.

How ovarian tumours end.—Parovarian tumours are sometimes cured by bursting. It is bad practice to try to produce this artificially, because you can never be sure that a tumour is parovarian. Occasionally twisting of the pedicle so lessens the supply of blood to a tumour that it ceases to grow. This is an event so rare that its possibility is not to be considered in deciding as to treatment. Even if it occur it is not cure, for the patient still has a lump of disease in her belly. It is believed that in simple cysts—those only distinguished by their size from hydrops folliculi—secretion may cease and tumours cease to enlarge. There is no ground for believing that this ever happens in the case of proliferating cysts.

The vast majority of ovarian cysts go on getting larger and larger until the patient dies, either from one of the accidents that have been mentioned, or from exhaustion due to the interference with digestion, with sleep, and with breathing. This is the end to be expected if the patient is not properly treated. At the present day most patients are properly treated, and this ending is seldom seen.

CHAPTER LVII.

THE DIAGNOSIS OF OVARIAN TUMOURS.

Phantom tumours.—When a patient otherwise healthy consults you for enlargement of the belly, the first question is, Is there a tumour? Bigness of the belly, even when said to have come on rapidly, does not necessarily imply tumour. It may be due to one of three things: (1) fat, (2) flatus, (3) muscular action, or to a combination of them. (1) Women sometimes get fat quickly, and therefore think there must be a tumour. (2) The belly is sometimes distended with flatus when there is no tumour and the belly walls are not fat. I refer not to occasional flatulence due to decomposition of intestinal contents, attended with borborygmi and the passage of flatus, in women who have other symptoms of gastro-intestinal derangement, but to habitual chronic distension of the belly in women who do not suffer from wind and are unaware of anything wrong with digestion. I know not why this flatulent distension occurs. In other women the belly is retracted, I know not why. (3) Some women get a trick of arching forward the lumbar spine and projecting forward the belly wall, so as to give it the appearance of being distended by a tumour. In the present day these conditions seldom cause serious blunders; but the abdomen has sometimes been opened and no tumour found.

Palpation.—In a case in which an abdominal tumour is suspected, and inspection shows that the belly is big, first see whether fluctuation is present. Put one hand on each side of the belly and gently flip it with the fingers. If no fluctuation is felt, the belly does not contain free fluid or a large cyst. Then percuss the belly. If it is resonant everywhere, a big tumour is unlikely to be present. The only resonant tumours are physometra and rare ovarian tumours, in which the cyst contents have decomposed and

liberated gas. Next, palpate. Bid the patient draw up her legs. Talk to her, and get her to talk; and while doing so steadily press your fingers down into the pelvis, back to the spine, and into each loin. If the patient contracts the abdominal muscles, try by steady pressure to tire them out. If you can press the fingers well home in these situations, there can be no large abdominal tumour. Lastly, examine bimanually, and get the uterus and its appendages between your hands. The fatter the patient and the more she resists, the more difficult is a complete examination of the belly. If you cannot satisfy yourself, ask for an examination under anæsthesia. By this you will eliminate the difficulty introduced by muscular resistance. In no doubtful case should an operation be performed until the belly has been well examined while the patient is fully anæsthetised.

Assume that there is fluctuation, that the abdomen is enlarged, that there is no reason to suspect pregnancy. The history does not suggest it, and there is no softening or discolouration of the cervix. The following are the causes which produce enlargement of the belly with fluctuation:—

I. The common ones.
1. Full bladder.
2. Ascites and intra-peritoneal collections of fluid.
3. Ovarian cyst.

II. The less common.
4. Hydramnios.
5. Hydro- or pyo-nephrosis; cystic disease of kidney.
6. Uterine tumours containing fluid.
7. Hydrosalpinx.
8. Distended gall-bladder.
9. Hydatid cysts.

III. The rare, those which can only exceptionally be diagnosed.
10. Pancreatic cysts.
11. Mesenteric cysts.
12. Splenic cysts.

1. **Full bladder.**—I put this first, because it can be eliminated by a catheter. When you have to diagnose the

nature of an abdominal swelling, always begin by passing a catheter; for even if the bladder be not full enough to be itself felt as a tumour, it may prevent you from feeling the parts on bimanual examination as plainly as you ought to do.

2. **Ascites**—that is, fluid free in the peritoneal cavity. When the belly contains a large cyst, it may need care to

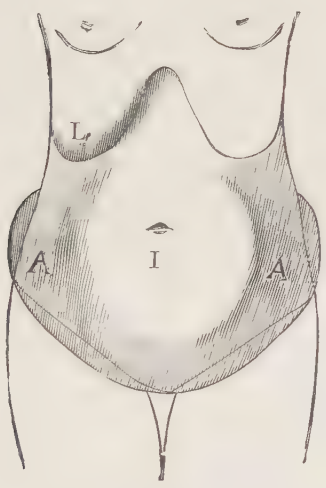


Fig. 223.—Diagram showing distribution of dulness and resonance in ascites. (*R. Barnes.*)

A, ascitic dulness; I, intestinal resonance; L, liver.

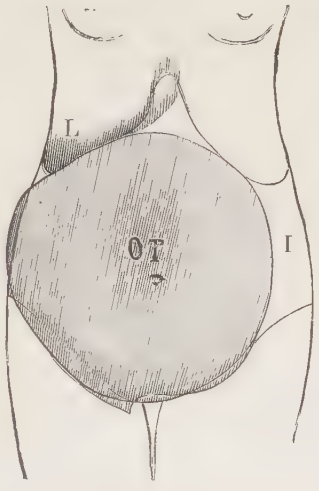


Fig. 224.—Diagram showing distribution of dulness and resonance with an ovarian tumour. (*R. Barnes.*)

O T, dull area of ovarian tumour; I, intestinal resonance; L, liver.

distinguish whether the fluid is encysted or not. Small cysts are not taken for ascites.

(*a*) *The shape of the abdomen.* When the patient lies on her back, the outline of the belly is rather flattened in front and bulging in the flanks. When fluid is in a cyst, the tenser the fluid the more nearly spherical is the cyst. The shape of the belly should suggest, but not decide, the diagnosis.

(*b*) *Universality of fluctuation.* The fluctuation wave in ascites is felt right across the abdomen, from side to side, down to the flanks, and from the top to the lower part. When fluid is in a cyst, the area of fluctuation is that of the

cyst cavity. It is only when there is one very large cyst that fluctuation is felt all over the belly.

(*c*) *Disposition and mobility of dulness.* In ascites the bowels float up to the top of the fluid. Hence with the patient on her back there is resonance in front and dulness in the flanks. The reverse is the case with an ovarian tumour (Figs. 223, 224). The dulness is movable. When the patient so changes her position that a flank which was the lowest part of the belly cavity, and therefore dull, becomes the highest, the bowel floats up to this part, and it becomes resonant. When she stands, there is dulness below, and resonance in front (Fig. 225).

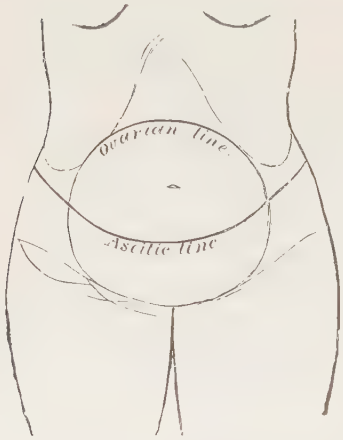


Fig. 225.—Differential characters of ovarian and ascitic dropsies in upright posture. (*R. Barnes.*)

(*d*) *Presence of a cause for ascites*, such as disease of liver, kidney, heart, or lungs. This should always be looked into, for the sake of treatment. But the discovery of such a cause does not settle the diagnosis, because a patient with disease causing ascites may also have a tumour.

I mention not the character of the fluid, because an abdominal swelling ought never to be tapped for diagnosis. If the diagnosis is uncertain, and letting out the fluid is needed to relieve the patient, do it by making a small incision, and then put in your finger and ascertain the condition within. Tapping with a trocar should be used only as a therapeutic measure in cases in which there is no doubt as to the diagnosis.

(*e*) Measure the belly, so that you may be able to judge accurately as to increase or diminution in size.

Complicated ascites.—Effusion of fluid into the peritoneum is often secondary to other morbid conditions within the belly, and its diagnosis is then more difficult

than when the peritoneum, except for the effusion, is healthy.

Serous perimetritis.—Here the effusion is a result of inflammation, and is contained in a space bounded by adhesions among the bowels. The physical signs are those of a cyst. The fluctuation is not universal, but limited. The distribution of dulness and resonance does not alter with position, because the bowels are fixed. There may or may not be resonance in front: this depends upon the position in which the bowels are fixed. The diagnosis between this encysted dropsy and a cystic new growth can only be made by the behaviour of the tumour under treatment. In serous perimetritis medical aid is usually first sought for the inflammation; and when this has subsided the swelling is noticed. For this reason I have more fully described this condition in Chapter XV. along with the other events of pelvic inflammation.

Tubercular disease of peritoneum.—This may produce ascites without any symptoms of peritonitis. In these the diagnosis is often difficult. The patients usually complain of failing health and abdominal enlargement before the amount of fluid is great. Hence the fluctuation wave may not be marked. The mesentery and intestine are stiffened by the tubercular growth, and hence the bowel does not float up to the top as readily as in ordinary ascites; and therefore the mobility of the dulness is not so plain as in uncomplicated ascites. The fluid is not encysted, as in serous perimetritis; but adhesions may shut off spaces from the general cavity of the peritoneum, and therefore the enlargement may be irregular and unsymmetrical. If the thickened bowel is near the surface, it may be felt as an area of increased resistance when the belly is palpated, but is seldom so firm and definite as a tumour. Hence a condition of belly in which it is often difficult to say whether there is fluid; or, if there is fluid, whether it is free, or whether there is a tumour. The diagnosis can only be made by an exploratory incision; and as this is curative as well as informing, it is proper to make one in a case presenting features that suggest tubercular disease of peritoneum. This will be the most convenient place in which to give some account of this disease.

Morbid anatomy. — In clinical use, this does not mean a few scattered tubercles on the peritoneum in common with other parts in general tuberculosis, nor the tubercles present on the peritoneum at the back of tubercular ulcers.

There are three kinds of tubercular disease of peritoneum:

(1) *Acute miliary tuberculosis:* with sudden onset, rapid progress, and serous or sero-sanguineous effusion.

(2) *Chronic caseous and ulcerating tuberculosis:* large growths caseating, ulcerating, leading to perforation, and often to sacculated suppuration.

(3) *Chronic fibro-tuberculosis:* sub-acute, with little exudation, and hard and pigmented tubercles.

These varieties are seen in the lung. They are found in other parts as well as in the peritoneum, but in a large minority the disease is in the peritoneum only. In 30 or 40 per cent. in women the Fallopian tubes are affected—generally the fimbriated ends—and there is good reason to think that the tubal disease is the primary change, the starting-point of the mischief, and that by removal of such tubes general tuberculosis might be avoided (see Chap. XVII.). The pleura is affected in from a third to half of the cases. The disease occurs at all ages; but is most common between twenty and forty. It is probably more common among females. In children it is often associated with bowel and mesenteric disease. *Post-mortem* examinations show it more common in males; operations among females. From the former, cases which recover are obviously excluded.

Clinically. — (1) It may be *latent*, occurring without a single symptom. It has been thus discovered in operations for ovarian tumour, or for hernia, or after death from acute disease of another kind.

(2) It may come on *suddenly*, with symptoms like those of strangulated hernia or acute peritonitis.

(3) There may be *gastric* symptoms, simulating those of ulcer or cancer of stomach; vomiting, inability to take food, and wasting.

(4) It may simulate *enteric fever:* irregular fever, distension of abdomen, etc.

(5) *Ascites* is frequent, but seldom great. *Tympanites* is

common. *Sub-normal temperatures,* for weeks or months together, are met with. *Pigmentation* is occasional, and the disease has been known to simulate Addison's disease; but this is exceptional. Pigmentation does not necessarily mean disease of the supra-renal capsules.

Diagnosis.—The diagnosis is thus often difficult. The cases that come to the gynæcologist are those in which the presence of dropsy or tumour has led to the supposition that ovarian tumour or pelvic disease is present. The cases that resemble cancer of stomach, enteric fever, etc. come not usually to the gynæcologist. Instruction as to the diagnosis of these cases will be found in Fenwick's lectures on "Obscure Diseases of the Abdomen." Great ascites, Fenwick points out, is usually associated with cirrhosis of the liver (itself a cause of dropsy), or thickening of the peritoneum, which obviously prevents the fluid from being re-absorbed. The physical signs of such ascites differ from those of ascites from other causes only in being less easily recognised, because the bowels are so often bound down by adhesions. In other cases, there seems to be a definite tumour.

Tumour formations.—Tubercular disease of the peritoneum has often been first discovered when the belly has been opened for a supposed tumour. Tumours formed by tubercular disease may be of five kinds:—

(*a*) *Omental tumours.*—Tubercle growing in the omentum thickens it, puckers it, and rolls it up, till it forms an elongated firm mass attached to the transverse colon, and lying across the upper part of the abdomen. Above this tumour is the resonance of the colon, by which it may be distinguished from an enlarged liver. Such a mass may occur without much exudation, and may then be difficult to distinguish from cancer. The tubercular nature of the disease may be suspected if there is a pronounced tubercular history, sub-normal temperature, and disease of lungs or pleuræ. There may also be accumulation of fluid between the layers of the omentum.

(*b*) *Splenic tumour.*—There may be a tumour in the splenic region, from thickening of the splenic capsule, and effusion of lymph and tubercular masses in its neighbourhood. Such a tumour will not resemble an enlarged ovary,

but will present the signs common to splenic tumours generally.

(*c*) *Sacculated exudations.*—These are the most common, and such tumours have been repeatedly taken for ovarian tumours, their true nature being discovered when the abdomen was opened. The exudation may be sero-fibrinous or purulent. The tumour may be entirely fluid, or may be nodular from the presence in it of caseous masses. Such sacculated tumours may be met with in the upper, middle, or lower regions of the abdomen. The exudation is limited by adhesions between coils of intestine, other abdominal viscera, and the abdominal wall. Such tumours in the upper region of the abdomen are generally associated with disease of the liver, gall bladder, stomach, or spleen. In the lower region they generally depend upon pelvic disease, and rise out of the pelvis. The tumours in the middle region are those which have most often been taken for ovarian tumours; and it may be impossible to make a diagnosis in any other way than by watching the course of the case. An ovarian tumour goes on growing; an effusion may be partly absorbed.

(*d*) *Retracted and thickened intestinal coils.* — The matting together and thickening of coils of bowel may form a distinct mass, and lead to the diagnosis of a solid tumour. Such tumours are most often met with in the cæcal region. The puckering and thickening of the mesentery may shorten it, and pull the coils of bowel back towards the spine, and thus a tumour may be formed which feels solid. Such tumours may be resonant, which should suggest the possibility of their being formed of bowel.

(*e*) *Mesenteric glands.*—Tumours of this kind are not common, but they have been met with, extensive tuberculosis of these glands forming palpable tumours associated with ascites. Old writers called these tumours "abdominal scrofula."

Diagnosis of tubercular tumours.—The lumpy, nodular character of enlarged mesenteric glands usually leads to a correct conclusion as to the kind of tumour. Thickened and retracted bowel is almost impossible to diagnose. The most important difficulty is the diagnosis between sacculated

effusions and ovarian tumours. This cannot be made by any one feature, or group of features. The diagnosis is very difficult.

First, *the history.* Tubercular antecedents; gradual failure in health; a history of abdominal pain, gastro-intestinal disturbance, and more or less fever. Such a history may be present in ovarian cysts, but is not usual.

Second, *the physical signs.* This diagnosis is much more difficult than that between ascites and ovarian dropsy, for here we have not to distinguish between a cyst and free fluid, but between two different kinds of cysts. If the tumour be small, its outlines will not be so definite as those of an ovarian cyst, and it will not be so movable.

Thirdly, *the chest* should be thoroughly examined. Disease of lung or pleura should suggest that the disease in the abdomen is tubercular.

Prognosis.—There is now no doubt, although this disease was long thought to be always fatal, that it often ends in recovery.

(*a*) *Spontaneous cure.*—Tubercle in the lungs often undergoes cure; why should not tubercle in the peritoneum? The cases of chronic fibro-tuberculosis are those in which the prognosis is most favourable. But recovery may happen when there is extensive effusion. The process of cure is by fibroid and pigmentary induration of the tubercles, absorption of effusion, transformation of lymph into connective tissue, adhesions only being left behind as the legacy of the tuberculosis. The conditions favourable to recovery are limitation of the disease to the peritoneum and slight degree of inflammatory change. Caseation, ulceration, and suppuration probably put cure out of the question. Disease of lungs or Fallopian tubes also makes recovery very doubtful.

(*b*) *Cure by operation.*—In many cases in which the belly has been opened and fluid withdrawn permanent cure has followed. Operation is therefore not only justifiable, but urgently indicated in such cases. The most favourable cases are those in which the disease is recent, and there is considerable effusion. When there are caseous masses and localised suppuration, the prospect is less hopeful. When there is no effusion, there is nothing to be gained by operation,

as nature is effecting a cure. It is difficult to explain how the cure takes place. In many—indeed, most—cases it seems as if everything needed was simply to open the belly and let out the fluid. It has been suggested that the fluid contains ptomaines, which poison the patient. This is a rational view; but we do not know what the ptomaines are. The effect of merely opening the peritoneum in abdominal disease, without doing anything, is sometimes remarkable. That some change is effected by opening the peritoneum is shown, as Lawson Tait has pointed out, by the distressing thirst which ensues, and which does not follow more prolonged and severe operations in which the peritoneum is not opened. The question has been raised, but never settled, as to those cases in which the peritoneum is studded with little bodies looking and feeling like miliary tubercle, whether these bodies are really the product of the tubercle bacillus. In the cases which recover, there is no evidence either for or against. The practical rule for treatment is that, in any case which is suspected to be tubercular peritonitis, the abdomen should be opened.

Ascites with a tumour.—There may be ascites with a large tumour (a small tumour does not alter the physical signs of ascites). There will then be universal fluctuation. But as the bowels are pressed by the tumour up and back, they are not free to move, and therefore mobility of dulness is not so marked as in ascites without a tumour, although there may be a little variation. When over the front of the belly there is dulness at the lower part, and resonance above, the following sign may help—that in ascites, by pressing the finger deep down near the limit of dulness, and percussing you may come upon resonant bowel, which has not been able to float up so far: while if there be a tumour, by pressing deeply down over the margin of the resonant part you may press aside bowel and come upon the dull tumour. But the physical sign mainly to be relied upon is that when you quickly press the tips of the fingers down upon the belly wall, you displace the fluid, and come upon the resisting surface of the tumour. In a case such as causes difficulty of diagnosis there will be great discomfort from distension, and letting off the fluid will be called for as a therapeutic measure. Act on

the rule of never putting a trocar into the belly unless you know there is nothing but ascites. Make a small incision, let off the fluid, and then put in your finger and feel if there is a tumour.

Ovarian tumours.—The commonest fluid tumour in the female belly is an ovarian cyst. In most cases the diagnosis of an ovarian cyst is easy. The fluctuation is limited in area —felt only over the tumour, not all over the belly. The wave may be transmitted right across the tumour; or it may be felt over parts of the tumour, but not be transmitted all the way across. The former indicates one large cyst; the latter a compound cyst with more than one large cavity. The outline of the tumour is distinctly felt; it is, on the whole, rounded. It rises out of the pelvis, and there is resonance between it and the upper ribs—a sign which distinguishes it from hepatic enlargements. The tumour is tethered to the pelvis by its pedicle; you can lift it up out of the pelvis, but only to a limited extent. It is distinct from the uterus, although connected with it. The uterus may be pressed forwards and downwards, or backwards and downwards, or towards one side. If the uterus is low enough down, you can ascertain by vaginal examination that it is normal in shape and size, and distinct from the tumour. You will make this sure by bimanual examination, thus grasping, if possible, the uterus separately from the tumour. If the uterus is so situated that you cannot do this, pass the sound. This instrument will generally tell you the direction and length of the uterine cavity.

Difficulties in diagnosis.—If the above signs were always present, there would be no difficulty in the diagnosis of ovarian tumours But there are exceptional circumstances in which the diagnosis is difficult, and it may be, until the belly has been opened, impossible. A very big cyst may fill the whole belly, so that the first impression given is that the case is ascites. A cyst not so big as this may be complicated with ascites; here you cannot, while the peritoneal cavity contains fluid, carry your diagnosis further than that there is a tumour of some sort. An ovarian cyst which is very tense may for that reason not fluctuate. When the cyst is small and the belly wall very fat, you may not be

able to feel fluctuation, the thickness of the fat combining with the mobility of the tumour to prevent the transmission of the wave. In either of these conditions you cannot distinguish between a solid and a fluid tumour of the ovary. But cysts are so much commoner than solid tumours of the ovary that, in case of doubt, you may expect a cyst. If the tumour has a long pedicle it may be so movable as not at first to seem a pelvic tumour. It may have a short pedicle, or, as is often the case in intra-ligamentous tumours, none at all; so that it may then seem one with the uterus. When an intra-ligamentous tumour is behind the uterus it pushes it forwards so close behind the anterior abdominal wall that the outline of the uterus is easily made out; but if it pushes the uterus towards one side it may be impossible to feel a separation between uterus and tumour. If fluctuation is not distinct it may be taken for a fibroid. I have taken such tumours for fibroids, and have known the same mistake made by operators of the highest eminence.

Diagnosis between ovarian tumours and uterine fibroids.—You can generally easily distinguish between ovarian tumours and uterine fibroids. The distinguishing marks of fibroids are their hardness, the absence of fluctuation, the elongation of the uterine cavity, and the oneness with the cervix uteri; when you move the cervix you move the tumour, and when you move the tumour you move the cervix. These differential criteria hold good of the majority of cases of either condition. But there are exceptional cases in which diagnosis is impossible. (1) I have mentioned one kind of ovarian tumour that may be taken for a fibroid, viz., an intra-ligamentous tumour, pushing the uterus to the side of the pelvis, and not containing a cyst large enough for fluctuation to be distinct. (2) A multilocular ovarian cyst generally contains, besides the big cyst, parts which feel solid and are made up of many little cysts. As a rule you feel these solid lumps at one part and fluctuation elsewhere. But it may be that these solid masses of little cysts are all in front and at the sides, and the big fluctuating cyst behind and in the middle. Then, when you palpate the belly, you will feel solid bosses and no fluctuation. I saw one patient who had been told by surgeons of large experience that she had

uterine fibroids and needed no operation. I felt hard lumps in the belly and no fluctuation, and concurred in the diagnosis. But the tumour grew so fast and the patient became so unwieldy that an operation had to be done, and the tumour proved a multilocular ovarian cyst, with all the masses of little cysts in front. A patient may have uterine fibroids and an ovarian cyst; and the fibroids may be in front, so that when the belly is examined the signs of fibroids are plain, and the whole enlargement may naturally be thought to be of the same nature. I have known an ovarian cyst escape recognition from this cause.

In the cases just spoken of exceptional conditions prevented fluctuation from being felt in fluid tumours. There also are cases in which tumours usually solid may fluctuate.

Fibroids simulating ovarian tumours.—Fibroid tumours of the uterus sometimes fluctuate. Soft fibroids usually give what Matthews Duncan called "feeling of fluid," as distinct from fluctuation. The feeling of fluid is the transmission across a tumour (without moving it) of a wave of firm pressure. This can be felt across the thigh from side to side, but not from above downwards. Fluctuation is the transmission of a wave caused by a light tap; and this is not felt over solid fibroids, whether hard or soft. But fibroids may degenerate, so that they come to contain spaces filled with fluid. If these cavities are big enough and close enough to the surface, they will give fluctuation. Such degeneration is apt to occur in subperitoneal tumours, and in them the uterine cavity is often not lengthened. You may thus have to do with a fluid tumour attached to a uterus which, so far as physical signs can tell you, is not enlarged. When the belly is opened, such a tumour may present a wall as thin as paper, and having the mother-of-pearl appearance of an ovarian tumour. I have placed such a specimen in the museum of the Royal College of Surgeons.* (Fig. 226.) Another has been described by Dr. Lewers.† I know no way in which such a tumour can be distinguished from an ovarian tumour except careful examination after the belly has been opened. There are all intermediate stages between such

* Catalogue, Appendix ix., 1895, p. 27, No. 4,643 D.

† "Obst. Trans.," vol. xxxvi. p. 370.

tumours as these and solid fibroids with cavities too small to alter the physical signs.

A sarcoma of the uterus may break down, and bleeding into it produce a fluctuating cavity, which may be taken for an ovarian cyst. I have placed such a specimen in the museum of the Royal College of Surgeons,* and have since

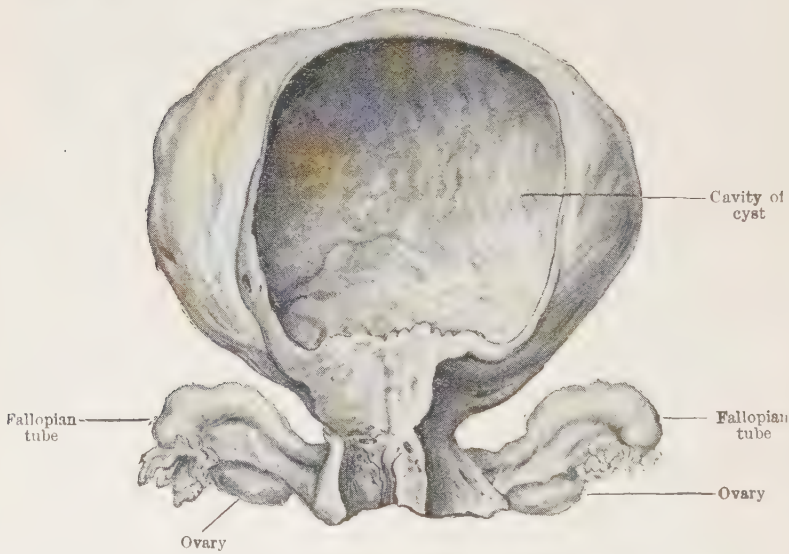


Fig. 226.—Thin-walled fibro-cystic tumour of uterus. (*From specimen*, 4,643D, *in the Museum of the Royal College of Surgeons.*)

met with another. (Fig. 227.) The rarity of such tumours will generally prevent diagnosis. If the uterine cavity is of normal length, the tumour will be taken for an ovarian cyst; if elongated, for a cystic fibroid. I know not how the sarcomatous nature of such a tumour can be found out till it has been examined after removal.

Hæmatometra.—I have seen one extraordinary case in which a fluctuating tumour was formed by bloody fluid contained in the uterus. Ten years before I had diagnosed a uterine fibroid. The tumour filled the belly and fluctuated. Menstruation was irregular. The cervix was high up, almost out of reach, and I could not pass the sound. I thought the

* Catalogue, Appendix vi., 1892, p. 37, No. 4,672 D.

tumour ovarian. When exposed and tapped, twenty-four pints of brown fluid came out. Then I found the tumour was uterine —I thought fibro-cystic,—secured the cervix with a clamp, and removed the main mass. The specimen is in the museum of

Fig. 227.—Sarcoma of uterus. (*From specimen,* 4,672D, *in the Museum of the Royal College of Surgeons.*)

the Royal College of Surgeons.* (Fig. 228.) It was examined by Mr. Targett, who found that the cavity had a wall of muscular tissue three-quarters of an inch thick, lined with smooth pigmented membrane. He therefore concludes that this is the uterine cavity. I regret that, as it did not occur to me at the time that I was dealing with a hæmatometra, I did not examine the cervical canal. I presume that a fibroid had broken down, and caused both bleeding into the uterus and blocking of the cervical canal, for the amount of fluid and the thickening of the uterine wall far exceeded what is ever seen in hæmatometra from retention of menses. Mr. Meredith has published a case † differing only in degree from this. In his case it was estimated that the uterine cavity contained at

* Catalogue, Appendix viii., 1894, p. 32, No. 4,C04 A.

† "Obst. Trans.," vol. xxix. p. 422.

least five lbs. of blood. The uterine wall was hypertrophied, being from one to two inches thick. There was a large disintegrating fibroid mass in the anterior uterine wall, so that no fluctuation was felt.

The rarity of such cases prevents me from making any

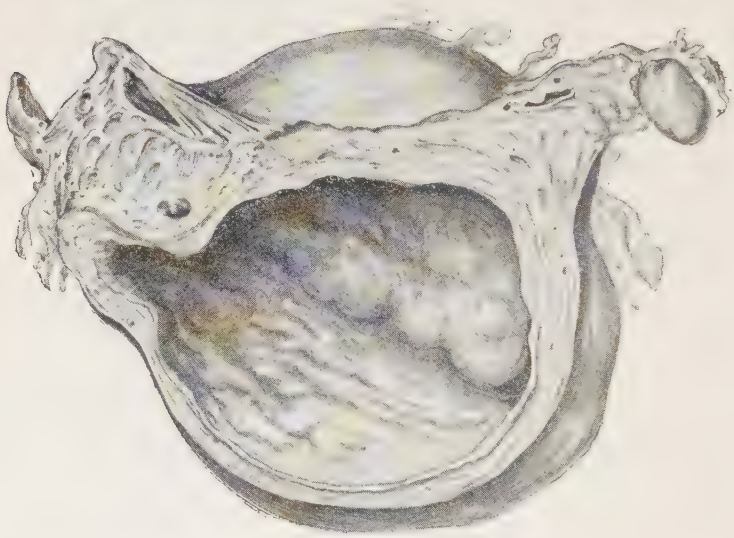


Fig. 228.—Large hæmatometra, probably caused by the breaking-down of a fibroid. (*From specimen*, 4,604A, *in the Museum of the Royal College of Surgeons.*)

general statements about them. I know not how they are to be distinguished from fibro-cystic tumours of the uterus.

Hydronephrosis forms a tumour over which, if it is big enough, fluctuation can be felt, and which may be difficult to distinguish from an ovarian tumour. As a rule the distinction is made by the fact that an ovarian tumour is tethered to the pelvis; and while distinct from the uterus, is yet attached to it, and pulls on it when moved about. An enlarged and mobile kidney can be pressed up into its place under the lower ribs, but not down into the pelvis, and when moved about does not pull on the uterus.

But a hydronephrosis may be so large as to reach down to the pelvic brim, and then the limits of its mobility do not aid us. The previous history may help: for the conditions which cause hydronephrosis often cause renal colic. It is not

conclusive, for a patient with ovarian tumour may have had renal colic. The condition of the urine settles nothing, for the distension of the diseased kidney implies that its urine does not escape. The urine you examine only tells you as to the bladder and the other kidney. The most useful sign is that the colon runs in front of the kidney, and may be resonant, while the loin behind it is dull. An ovarian tumour is dull in front, and there is resonance behind it in the loin. It is possible, but rare, for bowel to adhere to the front of an ovarian cyst. Intestinal adhesions are generally to the upper and back part of an ovarian cyst. The colon in front of a renal tumour is not always resonant. I have known it felt as a soft, limp band running down over the front of a big kidney. Hence this sign, though useful, is not absolute. Lastly, examine the bladder with the cystoscope, and observe whether urine flows out of each ureter.

In hydronephrosis sometimes the obstacle blocking the ureter is overcome, the fluid in the kidney escapes into the bladder, the patient passes much urine, and the tumour shrinks. Some cases, reported in days before ovariotomy, of ovarian tumours cured by absorption were probably cases of hydronephrosis. A history of this sequence of events having happened is a point in favour of hydronephrosis. It is not conclusive, (1) because patients do not always observe or describe accurately what happens; (2) because an ovarian tumour may burst, the fluid be absorbed by the peritoneum, and cause diuresis.

Hydrosalpinx.—Hydrosalpinx cannot clinically be distinguished from an ovarian cyst. If there is a tumour on each side, that may suggest, but does not prove, that they are distended tubes. In hydrosalpinx there are often neither symptoms nor history of symptoms. When a hydrosalpinx is removed by operation it is nearly always because it has been taken for an ovarian cyst. Hydrosalpinx so large that fluctuation in it can be felt through the abdominal wall is rare. When the dilated Fallopian tube forms the wall of a large tumour it is often difficult to say even after removal whether the tumour is a hydrosalpinx or a tubo-ovarian cyst. Some think that hydrosalpinx, others that tubo-ovarian cysts, are the commoner. As but few cases have been carefully

examined, it is impossible at present to decide this question. The difficulty is not practically important, for the removal of a large cyst, whether hydrosalpinx or a tubo-ovarian cyst, is the best treatment, and is attended with but little risk.

Mesenteric cysts.—A cyst of the mesentery has been taken for an ovarian tumour. Rasch* has published such a case. Cysts of the mesentery are spaces between the layers of the mesentery in which fluid has collected; they have no definite lining membrane. When small they are usually situated in the umbilical region; they can be moved freely from side to side, but very little up and down. The cyst in Rasch's case was large, containing six pints of fluid, occupied the left side of the belly, and reached down to the pelvis. It was supposed to be a parovarian cyst, and its nature was not found out till the belly was opened.

These cases are so rare that I know not how this mistaken diagnosis could have been corrected. The only treatment is to open the belly. Never thrust a needle into a doubtful tumour. If a mesenteric cyst be found, it should be opened and the fluid let out. Some have been cured, like Rasch's case, by stitching the opening in the cyst to the abdominal wall. The cyst will go on discharging for an uncertain time, and may finally close. A better practice is to enucleate the cyst, which is sometimes possible. If this cannot be done, the only curative measure would be to resect with the tumour the length of the bowel to which the piece of mesentery containing the tumour is attached: a severe and lengthy operation.

Pancreatic cysts.—A fluctuating tumour of the belly may be a cyst of the pancreas. Such a cyst might be taken for an ovarian tumour. Three-fourths of pancreatic cysts, according to Rotter,† push forward the omentum between the stomach and colon, so that the stomach lies in front of the cyst and the colon below, and if the cyst gets bigger it pushes the stomach up and the colon down. Sometimes they grow between the layers of the transverse meso-colon, and then the

* "Obst. Trans.," vol. xxxi., p, 311. *See* also Haas, "Centralblatt für Gynäkologie," 50, 1904.

† "Zeit. für Geb. und Gyn.," Bd. xxvii., S. 228. *See* also Doran, *Brit. Med. Journal*, December 18, 1897.

colon is in front of the cyst, which may then be taken for hydronephrosis. Thirdly, they may push forward the lower layer of the transverse meso-colon, and then the transverse colon will be above the cyst. It is when in this situation that a pancreatic cyst might be taken for an ovarian cyst. I know not how the cyst can be ascertained to be pancreatic without opening the belly. By bimanual examination you ought to be able to find that there is no connection between the cyst and the uterus—that either can be moved without moving the other, and you ought to feel the uterus and ovaries.

Splenic cysts.—Péan has published a case in which a simple cyst of the spleen formed a fluctuating tumour in the left lower belly and seemed to surround the uterus. It was taken for an ovarian cyst, and its nature discovered at the operation.* I know not how such a displaced cystic spleen could have been identified. In simple enlargements of the spleen the organ preserves its shape, but when cystic its natural shape is lost. Sometimes an enlarged spleen contains several cysts. Hydatid cysts of the spleen, though rare, are commoner than simple cysts.

The spleen has now many times been successfully removed; and if a tumour that is supposed to be ovarian should afterwards turn out to be a splenic cyst, it may be removed with safety.

Omental cysts.—Sometimes the layers of the great omentum are separated by a collection of fluid, so that a cyst is formed. This has been called by Mr. Bland-Sutton an "*omental hydrocele.*" The museum of the Royal College of Surgeons contains one such cyst, which was several times tapped because it was thought to be ovarian. These cysts are very rare. The foramen of Winslow has been found stopped up, and the lesser cavity of the peritoneum distended with fluid. Bland-Sutton thinks that some cases described as pancreatic cysts were really collections of fluid in the lesser cavity of the peritoneum. By bimanual examination the uterus and its appendages ought to be felt apart from the tumour. If you have done this, and thus proved the tumour not ovarian, I know not how you can tell that it is an omental hydrocele.

* Magdelain, "Des Kystes séreux et acephalocystiques de la rate." Paris, 1868.

Echinococcus cysts.—These may be taken for ovarian cysts. The mistake is not likely to occur in the case of a small hydatid cyst of the liver. But (*a*) a hydatid cyst of the liver may be so large as to reach down to the pelvis. Here the history will be that the enlargement of the belly began above. On percussion there will be no belt of resonance between the upper part of the tumour and the right lower ribs. A history is seldom to be trusted in the diagnosis of disease, because it usually conveys only the patient's ideas. But a patient who has a hydatid tumour reaching from liver to pelvis is pretty sure to have seen a doctor before it was so big, and thus to be able to give information as to its seat of origin. (*b*) The hydatid tumour or tumours may be in the omentum, growing in or on other viscera than the liver, and form a fluctuating swelling in the lower belly, extending down between the uterus and rectum. Such a tumour has been taken for an ovarian cyst. I know not how the diagnosis is in such a case to be made until the belly has been opened. (*c*) There is a sign called the "hydatid fremitus"—a peculiar vibration felt when three fingers are placed upon the tumour and the middle one is tapped. This is not always present with hydatids, and may be present without them; it is therefore not important. (*d*) These cysts may do much mischief. They may suppurate and burst into bowel, bladder, uterus, vagina, or buttock, and by long-continued suppuration exhaust the patient's strength. They may by their pressure cause absorption of bone, and thus eat out large sinuous cavities in the pelvic bones, and even penetrate the acetabulum and eat into the femur. (*e*) If a living hydatid cyst should burst, or in any way its fluid get free in the peritoneal cavity, secondary cysts may get scattered about and implanted in the peritoneum.

The treatment of hydatid cysts is to remove the hydatids and drain the cyst. In the case of pelvic hydatids this is best done by the vagina, but it is easy to do it by the abdomen.

Distended gall bladder.—A distended gall bladder, which is from seven to nine times commoner in women than in men,* has been taken for an ovarian cyst by competent

* *See* Henry Morris, *Brit. Med. Journal*, 1895, vol. i., p. 238.

surgeons.* Distension of the gall bladder is generally preceded by attacks of biliary colic with jaundice. This is suggestive, but not conclusive; for a patient may have had colic and jaundice and yet have an ovarian tumour, and not a distended gall bladder. An enlarged gall bladder is situated in front of the belly, below the liver. It is movable, and it moves in the arc of a circle the centre of which is a point beneath the edge of the right lobe of the liver. It may be pushed back into the loin, but when pressure is removed it springs to the front again. It descends with the liver during inspiration. It may sometimes be pressed down into the pelvis, but in that case the liver descends with it. Lastly, by careful bimanual examination, the uterus and ovaries will be felt apart from the tumour.

A gall bladder so large as to be taken for an ovarian cyst requires operative treatment; and, therefore, if the surgeon be competent, the mistaken diagnosis, found out after opening the belly, will not be injurious.

Hydramnios.—Dropsy of the amnion, either with uterine or with ectopic pregnancy, may cause the belly to be enlarged and fluctuating. I shall describe these conditions in a subsequent chapter.

Encysted peritoneal fluid, not perimetric.—Galabin† has related a unique case of a woman who had been tapped for a supposed ovarian tumour, and the fluid had re-collected. There was evidently a large cavity reaching as high as the stomach, containing fluid and gas, and giving a succussion splash. When the belly was opened, the cyst was taken for an irremovable ovarian cyst. On *post-mortem* examination the cyst was found to be a cavity bounded by peritoneal adhesions into which led a fistulous opening in the stomach.

Exploratory incision.—Ovarian cysts are far commoner than any other fluctuating abdominal tumour. For this tumour operation is imperative, for nearly all ovarian cysts go on growing till they kill the patient; and we cannot before operation distinguish those that *may* stop growing from the commoner ones that will not. In fluid tumours other than ovarian, if cure is needed, the only cure is by operation.

* *See* Sutton, op. cit.

† "Obst. Trans.," vol. xxix. p. 150.

Hence diagnosis is needed mainly to answer this question: operation or not? If a tumour is of doubtful nature and is causing no trouble, watch it, and see if it gets larger. If it is not growing, let it alone. If it is growing, or if it is causing serious trouble, the diagnosis should be completed by an exploratory incision. This will give accurate information as to the nature of the tumour; and if it be found one capable of surgical cure, the incision can be enlarged and the tumour dealt with. Never thrust a trocar or needle into you know not what. Either let the tumour alone, or do that which will cure it, if cure be possible, and if not, abolish doubt as to its nature.

The cases in which you should be most cautious in advising an exploratory incision are those in which there is no doubt as to the presence of a tumour, but great doubt as to whether it can be removed. Unless it is certain that the tumour cannot be removed, an exploratory incision should be made; for not to do this is to let a patient die who might *perhaps* be cured. Be careful not to promise too much from it, lest you raise hopes only to be shattered. Remember also that in some cases—those, for instance, with cancer in the peritoneum—it may be impossible to make an exploratory incision without so damaging cancer growths as to set up fatal bleeding or peritonitis. Therefore do not advise it unless there is some hope that an operation can be successfully completed. Exploratory incisions are sometimes spoken of as being free from danger. So they are if the operator's hands and instruments are clean, the peritoneum healthy, and the operation an exploratory incision and nothing more. An unsuccessful attempt to remove a tumour is not an exploratory incision, but an incomplete operation almost surely fatal. An exploratory incision is merely putting in the finger and feeling the relations of the tumour and surrounding parts. Nothing more than this should be done unless it is certain that the tumour can be safely removed.

Who should make an exploratory incision? — The diagnosis of most ovarian tumours is easy, but cases might be quoted in which experienced abdominal surgeons have opened the belly in the belief that an ovarian tumour was

present, and found that the tumour was of a different kind. Much more is this likely to happen if the tumour is one that needs an exploratory incision to complete the diagnosis. A surgeon who opens the belly, therefore, ought to know how to deal with any condition that he may find inside it. This knowledge can only be got by experience. An exploratory incision should only be made by one competent to complete the operation if it be found practicable.

CHAPTER LVIII.

OVARIOTOMY.

In describing this operation, the parent and type of abdominal sections, let me first repeat that as a matter of course every aseptic and antiseptic precaution should be taken. All instruments should be boiled. No one should touch the patient or an instrument except assistants named beforehand. The assistants should have clean hands and clean aprons to protect their clothes. A basin of 1-1000 sublimate solution should be on a table on each side of the patient in which operator and assistants should from time to time rinse their hands. These details are the same as those in all operations. You will learn about them, and the reasons for them, in works written by specialists on the subject.

Preparations for ovariotomy.—In the early days of ovariotomy it was thought well to prepare the patient by keeping her in bed for three or four days beforehand, so that she might get accustomed to bed. This is needless. The relation of the day of operation to menstruation, and the time of day for operation, were supposed to influence success. But it matters not at what period of the menstrual cycle the operation is done; and recovery does not depend upon whether the operation is done in the morning or the afternoon. Of course the urine should be examined, for no one would do a major operation on a patient with acute renal disease, nor an operation which could be safely postponed on a patient with any renal disease. But if a patient has a large ovarian tumour and chronic renal disease, it is possible that the ovarian tumour may kill her sooner than the kidney disease would, and likely also that the kidney disease may be aggravated by the pressure of the tumour. Therefore the operation should be done, notwithstanding the kidney disease. Sir Spencer Wells says that if operation is done when the urine is concentrated, depositing lithates, "uræmic fever" will follow; the urine ought therefore to be first cleared by giving lithia

water. I know not exactly what is meant by "uræmic fever." Other surgeons have not observed this.

The important preparations are that the patient should be in a properly drained and ventilated house, in a room large enough to accommodate the nurse as well as the patient. She should lie on a mattress, on a bed narrow enough to allow the nurse to reach her easily from either side. The latter detail

Fig. 229.—Large pressure forceps.

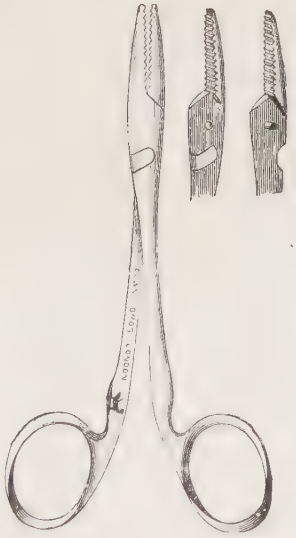


Fig. 230.—Small pressure forceps.

affects the well-being of the nurse rather than that of the patient. If these conditions cannot be complied with in the patient's house, she had better be moved elsewhere. The bowels should be cleared by an aperient given the night before, aided by an enema on the morning of the operation. The particular aperient given is unimportant. Many women habitually take some aperient; and if the patient thus knows of one that suits her, that is the one to give. The patient should take no food for six hours before the operation. Immediately before the patient gets on the table she should empty the bladder. If there be any doubt about the bladder having been emptied a catheter should be passed.

Instruments required:—

A scalpel.

A pair of toothed dissecting forceps—those sold as conjunctiva forceps are best.

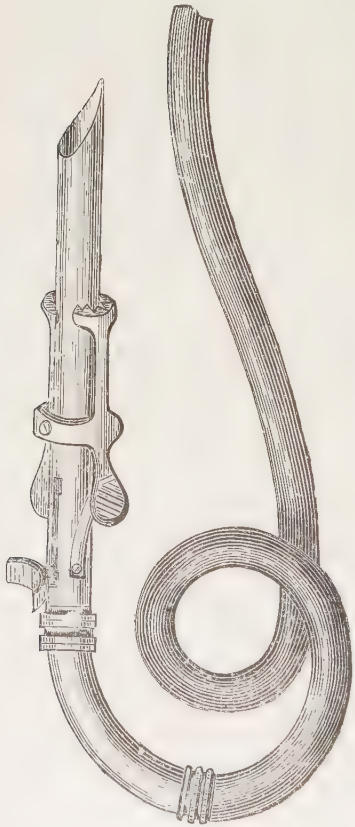


Fig. 231.—Wells's large ovariotomy trocar.

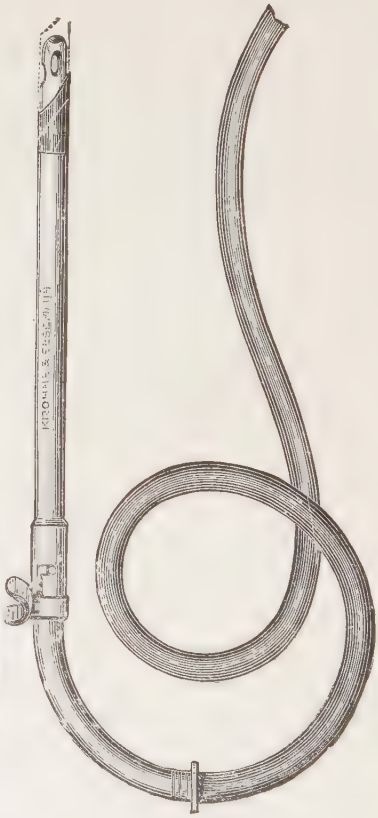


Fig. 232.—Wells's small ovariotomy trocar.

Six large pressure forceps. (Fig. 229.)

Six small pressure forceps. (Fig. 230.)

Two blunt hooks.

Two retractors.

Blunt-pointed scissors.

Wells's large ovariotomy trocar, with tubing. (Fig. 231).

Wells's small ovariotomy trocar, with tubing. (Fig. 232.)
Wells's blunt-ended pedicle needle.
Twelve No. 1 half-curved needles.
A hank of No. 5 china twist for pedicle and wound sutures; the half-curved needles to be threaded with ligatures of No. 5 silk, eighteen inches long, two needles on each ligature; or instead, silkworm gut, which is the best material for the wound stitches. It stands boiling well, and is not irritating. But it is not absorbed, therefore is not suited for the pedicle.
A hank of No. 1 china twist (for tying bleeding points).
Six Rampley's sponge holders. (Fig. 233.)
Needle-holder—Wells's, but with a clip.
Sponges: two flat, twelve round small sponges; two large sponges.
Other things needed are:—
Razor.
Two macintosh aprons, one for the operator, one for his assistant.
Two trays or dishes for instruments filled with 1-20 solution of carbolic acid; in the one put scalpel, scissors, dissecting forceps, trocars, clamp; in the other, pedicle needle and wound needles threaded.

Fig. 233.—Sponge-holder

A wide-mouthed pint jug filled with carbolic acid solution; in this put the large pressure forceps.
A tumbler filled with carbolic acid solution; in this put small pressure forceps.
Iodoform gauze, iodoform, Gamgee tissue, binder.

Preliminaries.—Let the person who is to give the anæsthetic choose which he will give, for he is responsible for it. Let the patient be anæsthetised lying down on a table, and let the instruments be covered or kept out of sight until she is unconscious. When she is unconscious put her in the

Trendelenburg, or raised pelvis, position. Many tables are made for this purpose. That devised by Professor Leopold of Dresden is efficient, and is the cheapest and most portable I know of. It is made of wood, and can be folded up when not in use.* The raised pelvis position gives the great advantage that when air is let into the peritoneum the bowels fall towards the diaphragm, and you can see the pelvic cavity; if there is bleeding, you can see the bleeding-point. Next wash the abdomen and symphysis pubis with soap and water, and shave the mons veneris. If it be not shaved, the dressing is likely to stick to the hair. Patients greatly dislike having it done, therefore say nothing about it, but do it when the patient is unconscious. Some put on to the belly a macintosh sheet with an oval hole cut in the middle, and bordered with sticking plaster. This leaves dirty marks on the skin, which have to be washed off with oil. Some lay towels, wrung out in carbolic solution, across and lengthways, so as to surround the site of incision. These may get disarranged. I prefer to put macintoshes above and below the part required to be exposed, and on these a large towel soaked in carbolic solution, and having a hole cut in the middle.

How to open the belly.—Cut with a scalpel in the middle line through the skin midway between pubes and umbilicus. You will come upon the subcutaneous fat. The longer the incision the greater the risk of ventral hernia. Therefore make it only about three inches long: you can lengthen it afterwards if needful. Do not try to make the skin tense while you are cutting through it, for you may thus displace it, so that you do not hit the middle line. Cut through the subcutaneous fat until you come to the white glistening surface of the aponeurosis beneath it. If there are any

* *See* "Cent. für Gyn.," 1890, p. 745. It consists of a wooden frame on which is jointed a flat piece of wood, about 3 feet 1 inch in length by about 20 inches in breadth. This is jointed at the opposite end to a shorter piece, about 14 inches in length. The end of the longer piece, to which the short piece is attached, can be raised, by a support beneath, to a height of 20 inches or less above the frame, according to the operator's convenience. The patient's trunk and thighs rest on the longer piece, her legs on the shorter piece. This apparatus can be put upon any table or bed. Its cost in Germany is 18 marks. The best operating table that I know of is Boldt's, sold in this country by Allen and Hanbury; but it is not portable.

bleeding-points in the tissues cut through, put pressure forceps on them.

Now with a conjunctiva forceps pick up the aponeurosis, and carefully scratch through it with the point of the scalpel where you have picked it up. You may see beneath it the subperitoneal fat; if so, enlarge the opening till it corresponds in length with the skin cut. You may see beneath it muscle; if so, you have not hit the middle line. In that case, push the handle of the scalpel between the muscle and its sheath. On the side next the linea alba the scalpel will not progress. Having thus found the linea alba, push the muscle away from it with the handle of the scalpel, and then cut through the aponeurosis to the required length. Now pick up with the forceps the subperitoneal fat and peritoneum, and pull it up through the wound. Open the peritoneum by cutting with the blade of the scalpel held horizontally. When the peritoneum is opened sometimes the inrush of air is audible: if there is ascites, fluid will escape. Put your finger in the opening, and with this as a director cut through the peritoneum along the whole length of the wound.

Possible mistakes at this stage.—(1) You may think you have got through the peritoneum when you have not done so, thus mistake subperitoneal fat for omentum, and so strip the peritoneum off the muscles. This error ought to be avoided by attention to the parts you are cutting through; also by the fact that you can push your fingers through the omentum, but not through the peritoneum.

(2) The cyst and the peritoneum may be adherent, so that you open the cyst when you think you are going through the peritoneum or the linea alba. If you find that when you grasp the peritoneum with toothed forceps, you cannot easily pull it up through the wound, suspect that it is adherent. When close adhesion is present, error may be unavoidable. If it occur, let so much of the cyst contents flow out, that it may be easy to prevent the residuum from escaping into the peritoneal cavity, and then open the belly higher up, above what seems to you the upper limit of the tumour. You will there get into the peritoneal cavity; and this done, you can extend the

incision downwards, and separate the cyst wall from the parts to which it adheres.

(3) The bladder has been found so pulled up in front of the tumour that it has been opened when the operator thought he was opening the peritoneum. This is not likely to happen in the case of ovarian tumours, for they seldom so pull up the bladder; but may happen in other tumours which may be supposed to be ovarian, such as a fibroid, or ectopic pregnancy. Rectify such a mistake by sewing up the cut in the bladder with Lembert's suture, and then extending upwards the incision through the belly wall until a part of the tumour above the bladder is reached.

Examination prior to tapping.—When you have thus made the abdominal incision, you will see the cyst. Examine it to make as sure as you can that it is a tumour which ought to be tapped. The surface of a multilocular ovarian cyst is white or grey, or with a mother-of-pearl lustre. If the tumour you expose is of a deep purple colour, think of the pregnant uterus. If it be of a lighter brick-red colour, think of a uterine fibroid or sarcoma. If its walls seems very thick, think of a dermoid. If very adherent, remember that it may have suppurated. If the surface is much ecchymosed, or purplish-black in colour, the pedicle is probably twisted. If with this, acute symptoms date some days back, and there is fever, the probability is that there is suppuration. Put in two fingers and feel round the base of the tumour. Try to make out its connection with the uterus, and whether it is bilateral or not.

If the tumour is bilateral, the probability is that it is papillomatous or malignant, and you had better enlarge the incision, and remove the tumours without tapping them. If the tumour is a dermoid, or has suppurated, do not tap it, unless it is very large. If a tumour is large and unilateral, and only slightly adherent, it may probably be tapped with safety. If large, and extensively adherent, its complete removal without tapping will need a very large incision, involving much exposure of bowels; while even if the contents be irritating, the adhesions will protect the general peritoneal cavity from the stuff, and they can be separated

more easily when the tumour has been lessened in size by tapping.

Tapping the cyst.—The best trocar is Wells's. See that the end of the tubing is over the pail to receive the fluid. Let an assistant place his hands so that he can press the belly wall against the cyst, and so as far as possible prevent fluid from getting into the peritoneal cavity. Hold the trocar perpendicular to the surface of the tumour, and with a smart push thrust it in. (Fig. 234.) In most cases the fluid runs freely out. When enough fluid has

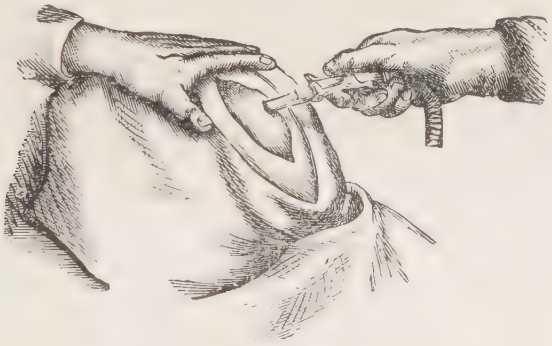


Fig. 234.—Introduction of trocar. (*After Sir Spencer Wells.*)

run out so to relax the tension of the cyst wall that it can be pinched up in a fold, seize it with forceps, pull it up through the wound, and make the claws of the trocar grasp the edges of the opening in the cyst. (Fig. 235.) While the fluid is running your assistant should keep the belly wall applied to the tumour, and as you pull the tumour out he should press the belly walls together behind the tumour, so as to express it. If there are no adhesions, and no large solid masses, the cyst will easily come out. If there are secondary cysts or solid masses so big as to prevent the tumours from coming out, enlarge the opening in the cyst, put in your hand and try to break them down. (Fig. 236.) If you cannot do this, it will be necessary to enlarge the incision.

How to deal with adhesions.—The adhesions you have first (in order of time) to deal with are those between the

tumour and the front wall of the belly. Till these are separated you cannot get the tumour out. Break them down

Fig. 235.—Extraction of cyst. (*After Sir Spencer Wells.*)

by passing the hand between the tumour and the belly wall. Bleeding from such adhesions is hardly ever great. If it has

Fig. 236.—Breaking-down solid masses. (*After Savage.*)

not stopped by the time you have cut away the tumour, examine the surface with a good light, pick up and tie the bleeding-points.

Omental adhesions are the most common. Deal with them after the tumour has been brought out of the belly. If

the adherent pieces are of a less width than that of two fingers, tie each piece about two inches from the tumour, and cut through it on the distal side of the ligature. After cutting each piece examine it to see that it does not bleed. If there is a large piece of omentum adherent, you will generally find some holes in it. Pass ligatures through these holes, and thus tie it in several bundles. In cutting it away, let your cuts go into these holes, so as not to leave them as such, for a piece of intestine has been known to get strangulated in a hole in the omentum.

Adhesions to bowels need care. Separate them after the tumour is out of the belly, so that you can see what you are about. Take the adherent bowel between your finger and thumb, so that your thumb nail is opposite the seat of adhesion, and strip the bowel off the cyst. If you cannot detach it, take the scalpel, and dissect off a small bit of the cyst wall with the bowel; but you will seldom have to do this. If the stripped-off part of bowel bleeds, pick the bleeding-points up with forceps, and tie them with fine silk.

Adhesions in the pelvis give most trouble. Break them down by steady pressure with the finger combined with pulling on the tumour. In this, practice alone can give skill. Be careful to distinguish an intra-peritoneal growth, adherent to the peritoneum covering the pelvic wall and viscera, from an intra-ligamentous growth; that is, one underneath the peritoneum. If the tumour be of the latter kind you must carefully divide its peritoneal covering, and then enucleate the tumour from its bed underneath the peritoneum. After either proceeding there may be oozing of much blood from a large surface. Bleeding from large vessels is not common, because they are strong enough to resist the moderate force which is enough to enucleate a tumour or break down adhesions. If there be much oozing, stuff the pelvis with sponges until you have tied the pedicle and cut away the tumour.

How to stop hæmorrhage.—If there is bleeding from pelvic vessels, you will be able to see it, with the patient in the raised pelvic position. The uterus generally falls back, covering up Douglas's pouch. Wipe the peritoneum in front of the uterus and broad ligaments, and see that this is not the

source of hæmorrhage. Then pick up the uterus, and hold it forward (grasping it with a volsella if necessary), and you will see into Douglas's pouch. Clean it out by sponging, and see where the bleeding comes from. If you have enucleated an intra-ligamentous growth, hold the peritoneal folds up and apart, and you will see into the cavity from which the tumour came. Clean it out with sponges, and look for bleeding-points. If you can see distinct bleeding-points in the pelvis, grasp them with pressure forceps, and try so to pull them up that you can tie them below the forceps. If you cannot do this, and the bleeding-points are small, it may be enough to leave the forceps on for a few minutes, while you attend to other things, and put the stitches in the abdominal wound. If when everything has been done, you find that bleeding recurs when a forceps is taken off, leave it on, and let it stick out at the wound and act as a drainage tube. But this is seldom required, for bleeding after enucleation or separation of pelvic adhesions is usually such general oozing that pressure forceps cannot be applied. For such hæmorrhage there are two modes of treatment. (1) Cauterisation: (*a*) by Paquelin's cautery. I have never used this for the purpose, but it has been recommended. Large vessels lie so close under the pelvic peritoneum that I should fear to burn extensively in this region. (*b*) By applying crystals of perchloride of iron, as advised by Lawson Tait. I trust not this. When I see surgeons stopping bleeding from amputated limbs by rubbing them with ferric chloride then I may do so. (2) Pressure. Stuff Douglas's pouch, or the broad ligament, as the case may be, with iodoform gauze, as tightly as you possibly can, and bring the end out at the lower angle of the wound to serve as a drain. Mikulicz, who introduced this treatment, put in first a sheet of gauze, and then plugged inside this, so that a bag was formed. The use of the bag was that the pieces of gauze inside it could be taken out with less disturbance of the parts. Remove the gauze at the end of a week; but it may be left in for a fortnight or more.

Securing the pedicle.—Many ways of securing the ovarian pedicle have been devised. In the early ovariotomies it was tied, and the ends of the ligatures were left long and brought out through the wound. Then it was fastened outside

the abdominal wound with a clamp. Next it was cauterised and the belly wound closed. All this is now only matter of history. It is now settled that the best way of dealing with the pedicle is to tie it and close the belly.

The best ligature material is silk. Some prefer china twist, others floss silk. It should be just thick enough to be pulled tight without breaking. If it is too thick it may not be absorbed. No. 5 china twist is thick enough. The pedicle consists of Fallopian tube, ligament of ovary, folds of peritoneum, and vessels and cellular tissue between them. Its

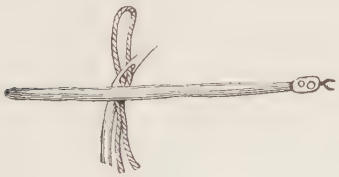


Fig. 237.—Transfixion of pedicle. (*Doran.*)

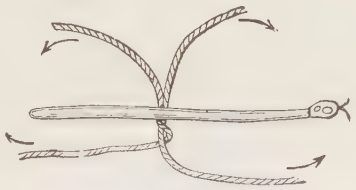


Fig. 238.—Loop cut and threads crossed so as to interlock. (*Doran.*)

thinnest part is that between the tube and the ovarian ligament. Spread it out, so that you may see where the vessels are. Take the blunt pedicle needle, threaded, and transfix the pedicle with it at a part where there is no large vessel (Fig. 237). Transfixion is a precaution against slipping of the ligature. Put your finger in the loop of the ligature, and withdraw the needle. Now cut the loop so that you may have two ligatures of equal length passing through the pedicle. Intertwine them so that when each is put round one half of the pedicle, they may be interlocked in the middle (Fig. 238). If they are not interlocked, they may when tied pull the two halves of the pedicle away from one another, and so split the pedicle, which will favour slipping of the ligatures (Fig. 239). Now tie each ligature round its half of the pedicle as tightly as you can by steady pulling without jerking. Make the first hitch of each knot a double one, to prevent its slipping and getting loose while you are tying the second. Tie with a reef knot, and if not certain about its security tie a third hitch. Cut short the ends of the ligatures, so that there may be no temptation to use them to hold up the pedicle. If the pedicle

is thin, you may pass one end of the ligature round the pedicle, pass it through the loop, and then tie it to the other

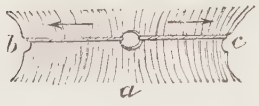


Fig. 239.—Diagram illustrating the danger of ligature of the pedicle after transfixion without interlocking the threads. (*Doran.*)

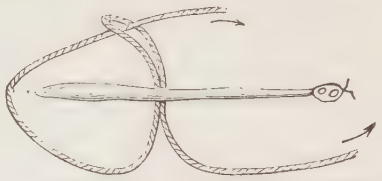


Fig. 240.—One end of the thread passed through the loop. (*Doran.*)

end. One knot is thus sufficient (Fig. 240). If the pedicle is broad, it may be necessary to transfix it more than once. In that case, after tying one loop, transfix the pedicle again, with the needle carrying a second ligature. Withdraw the second ligature from the needle, and thread the needle with the second

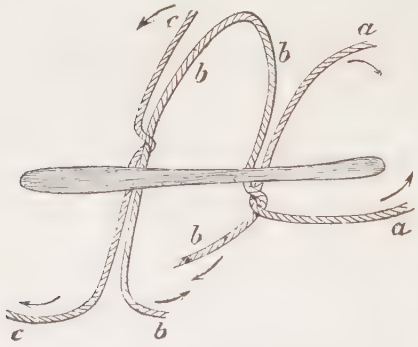


Fig. 241.—Double transfixion, showing interlocking of the threads. (*Doran.*)

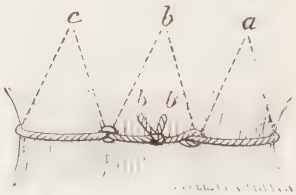


Fig. 242. — Double transfixion: threads tied. (*Doran.*)

loop of the first ligature. Withdraw the needle, thus bringing the second loop of the first ligature through the same hole as the second ligature. Interlock these two ligatures. Tie the second loop of the first ligature (which will thus compress a bundle of tissue in the middle of the pedicle), then tie the second ligature round the remainder of the pedicle (Figs. 241, 242). It may be necessary, if the pedicle is very broad, to transfix it even three or four times. Put two strong pressure forceps on the pedicle outside the ligature, and cut away the tumour outside the pressure forceps. After

cutting away the tumour, examine the surface of the stump to see that it does not bleed—first before removing the pressure forceps, and then after removal of each. Having made sure that it does not bleed, drop the stump. Feel for the other ovary, bring it up through the wound and examine it. If you find that it is the subject of disease which will progress, remove it. Remove it also if the tumour removed is a papilloma or malignant, or if the patient is over forty-five.

What happens to the ligature.—The tissues above and below the ligature bulge over it, and come into contact. Lymph is exuded, covers the ligature, and becomes organised

Fig. 243.—Stump of an ovarian pedicle : death from tetanus on the eighth day after operation. The silk ligatures are completely concealed, a glass rod is placed between them and the bands of lymph passing from the proximal to the distal portion of the stump. From nature. (*Doran.*)

into fibrous tissue (Fig. 243). Leucocytes invade the ligature, and in time eat it up. The thicker the ligature, and the more strands are put round the pedicle, the heavier is the meal for the leucocytes, and the more difficult their work ; hence the greater the risk that they may fail, and suppuration take place round the ligature, which will then be ultimately discharged by the abdominal wound, or, more rarely, by the bladder or rectum.

Cleansing of peritoneum.—Throughout the operation, prevent soiling of the peritoneum as much as possible. When fluid is running out, guide it outside the body by pressing the abdominal walls against the cyst, and by packing sponges, where necessary, to oppose its entrance to the peritoneal

cavity. Handle the viscera no more than can be helped, and as gently as possible, and expose them for as short a time as possible; for rough handling, prolonged manipulation, and exposure damage the epithelium. If bowels protrude, and you cannot keep them back while removing the tumour, cover them up with a towel wrung out of warm carbolic acid solution.

But fluid may get into the belly in spite of care. In some cases no care can prevent it, as, for instance, when a cyst has been burst before operation, or is torn early in the operation. There are two ways of cleaning a soiled peritoneum: (1) sponging, (2) washing. The first aims at leaving the peritoneum dry as well as clean: the second at cleanliness only, not dryness. Some operators have pronounced in favour of the one, some of the other. Accept no recommendation as suited alike to all cases. The indications for each mode of cleansing the peritoneum are different. When there is fluid in a limited area (and you should try to limit any effusion that takes place), remove it by sponging, and try to leave the peritoneum dry. But when there is much fluid free among the bowels, you cannot try to sponge dry every viscus and every recess without possibly doing more harm than the fluid would. Then wash. Pour in sterilised normal saline solution at the temperature of the body, so as to fill the peritoneum with it. *Hot* water is sometimes recommended on account of its hæmostatic effect. What I have said about the use of ferric chloride as a hæmostatic applies also to hot water. Its use for this purpose should be limited to the bleeding surface. Do not flush the whole peritoneum with very hot water. Having filled the peritoneum with warm water, move the bowels about in it with the hands. Pump water into the more remote recesses with a syringe, or, better, let it run from an irrigator armed with a clean glass nozzle.

Washing out the belly when the patient is in the raised pelvis position has been objected to, on the ground that, when there is foul matter in the pelvis, it may, by the washing, be carried up to the diaphragm, where it is less easily dislodged and washed out. I do not advise washing out when the stuff to be got rid of is in the pelvis only. Here sponging is better. In a doubtful case—one in which you fear that

washing might have this bad effect, and yet you are not satisfied with sponging—put the patient flat before you wash out.

Sterilised normal saline solution is as good to wash with as any antiseptic. The antiseptic solutions that can be relied upon to kill every germ will kill the patient as well. The chances are millions to one against water from the tap containing septic organisms.

As to drainage.—Bleeding having been stopped, and the peritoneum cleaned, close the belly. First count the sponges and forceps, to make sure that none are in the belly. But you will meet cases in which you cannot quite stop bleeding nor quite make clean the peritoneum. The question then arises, Shall I drain? If the condition of the parts is such that, after the belly is closed, fluid will be poured out in greater quantity than the peritoneum can absorb, drainage is necessary. I shall speak further of this after describing the treatment of ordinary cases.

Closure of the wound.—How the belly wound is closed influences little the recovery of the patient, but much influences her future comfort. Upon it depends whether she gets a ventral, or, as Americans better term it, an incisional, hernia. We cannot say of any method of suture that it will prevent hernia. Hernia may occur many years after an operation, so that no operator can say that his patients never get ventral hernias until he has before him the whole of their after-lives. Goldspohn (*American Gyn. and Obst. Journal*, September, 1897) quotes authors who have inquired into the frequency with which hernias follow operations. Homans in 242 cases found 14 per cent.; Winter, in 522 cases, found 30 per cent. Other authors, whose estimate is based on fewer cases, find fewer hernias. This is because hernias take time to develop. Winter, in tracing up his cases, found that the longer the date since the operation the more common was hernia. Many plans have been adopted to prevent hernia. The wound has been stitched in layers. This will not prevent hernia, and may favour it: for if a muscle stitch suppurate, while the skin wound heals, the abscess may separate the muscle layers. I think the best way is to put in one set of stitches; to be careful that each stitch goes through the peritoneum close

to its edge, so that no border of peritoneum is tucked in between the muscles; that each stitch takes up a good bundle of muscle; and that no skin is tucked in, and that the muscle

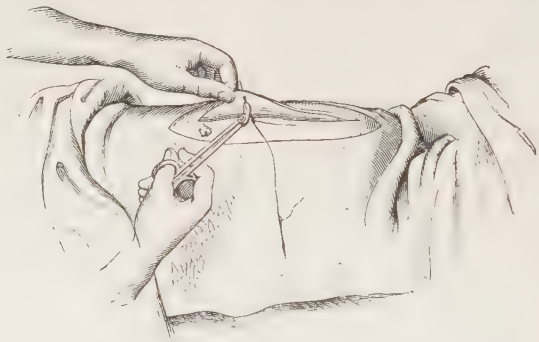


Fig. 244.—Closure of wound: needle being passed through peritoneum. (*Savage.*)

bundles are well pressed together. The best suture material is silkworm gut: No. 4 china twist will also do. Stitch-hole

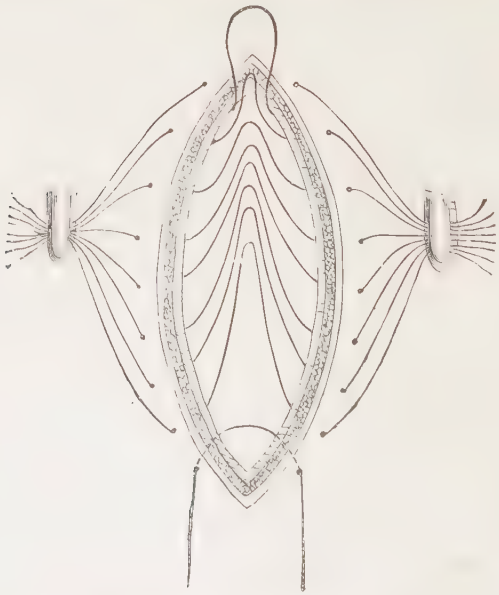


Fig. 245. Showing how to hold ligatures out of the way for withdrawal of sponges. (*Doran.*)

abscesses come either from dirty suture material or from too tight stitches.

Put a flat sponge in the belly underneath the incision to protect the bowels. If there has been oozing, put also a "tell-tale" sponge deep down in the pelvis. The stitches are best put in with No. 1 half-curved needles held in a holder. Pass each stitch from within outwards, entering close to the peritoneal edge (Fig. 244), taking up a large bundle of muscle, and emerging about a quarter of an inch from the skin edge. When all the stitches have been put in, hold their ends in artery forceps, and then with a blunt hook draw them away from the centre of the wound. (Fig. 245.) Then take out the sponges. The deep one will show how much oozing is going on. Tie each stitch, first with a double turn, to prevent the first hitch from slipping while you tie the second; then with a second hitch. Pull the stitch just tight enough to prevent gaping of the wound; too tight stitches will inflict unnecessary pain, and may cause stitch-hole abscesses. The distance between the stitches must depend upon the thickness of the belly wall; if this be thin, they must be closer together. Having tied them, if the skin be puckered, pull the edges together with forceps, so as to smooth out puckers. If still the skin edges are apart between the stitches, put in some superficial stitches between the deep ones, so as to bring together skin and subcutaneous fat.

Dressing the wound. — The simpler the dressing the better. Wash the wound and the skin around; dry it, and liberally powder with iodoform, or lay on the wound several folds of iodoform gauze. Then apply a pad of Gamgee tissue large enough and thick enough to prevent any folds of the binder from being felt as lines of pressure. Then apply a flannel binder fastened as tightly as you can. The elasticity of the flannel will prevent it from hurting the patient by its tightness.

After-course and treatment.—While the patient is recovering from the anæsthetic there is generally *vomiting*. The amount of vomiting depends partly on the anæsthetic used, partly on the length of time during which the patient is under its influence, and partly on the habit of the patient. Some women are very subject to vomiting from causes such

as menstruation, migraine, or railway travelling, and these women vomit much after an anæsthetic. I have known such vomiting last for a week after an abdominal operation. During the two days following ovariotomy most patients suffer much from flatulent colic; pain, rumbling about the belly, temporarily relieved by escape of flatus. This much depends upon whether the patient is very sensitive to pain. This pain usually gets better about the third day, but it may be complained of after this day. There is nearly always much thirst; why this comes about is obscure. It is worse when the peritoneum is opened above the pubes than when it is opened by the vagina; and seems worse when ovaries are removed than when merely fixation of the uterus is performed. The only reason that I see for restricting fluid is that a large quantity may distend the stomach and provoke vomiting. Hence tell the patient only to take spoonfuls, but to take them as often as she likes, provided the fluid does not make her sick. The best fluid to begin with is water, which the patient may have hot or cold, or iced, as she likes. When inclination to vomit has ceased, let the patient have milk in spoonfuls: either hot, cold, iced, or with soda-water or barley-water, as she may prefer. When she can take and keep down this, she may have other liquid foods; and then gradually get back to ordinary diet as her appetite directs. Patients often early long for a cup of tea, and there is no reason why they should not have it if nausea has ceased. They are seldom inclined for ordinary food before the fifth or sixth day. Let the patient pass her urine herself if possible: if there be retention, let not the catheter be used oftener than is necessary to relieve discomfort.

Remove the stitches as a rule on the eighth day. If the wound is painful, take them out before. If the wound is a long one, and not painful, leave them till the tenth day. Leaving the stitches in too long favours stitch-hole abscesses; taking them out too soon brings danger of the wound bursting open if the patient coughs, vomits, or strains. After taking out the stitches, support the wound with strapping. Put a pad of Gamgee tissue three inches wide on the wound. Cut two pieces of strapping each two and

a half feet long and two inches wide, thus. (Fig. 246.) Apply them on opposite sides; pass one through the slit in

Fig. 246.—Strapping to draw together parts after abdominal section.

the other, and draw them tight; keep the wound thus supported until it has healed. The patient may generally begin to get up at the beginning of the third week.

Drainage. — In some cases you have reason to expect that, if you close the wound, fluid will be exuded into the belly, and that the putrefactive organisms which have got into the belly during the operation will find this fluid a soil fit for their growth, and possibly for the acquirement by their descendants of the power of hurting the living body; in other words, of poisoning the patient.

Putrefactive germs, which are everywhere present, get into the peritoneum whenever it is opened—if they find nothing to feed upon they are eaten up and do no harm. It is very difficult to judge whether a peritoneum should be drained or not. I can lay down no closer rules than those which follow. Experience alone can teach when to drain and when not. This is one of the difficulties that may arise in an operation that seemed likely to be simple. Drainage was at one time largely used, but the tendency of operators now is to use it less and less.

The cases for drainage are:—(1) Those in which a pus-containing cavity has been opened, but not entirely removed; here a path for the escape of pus must be kept open. (2) A hole may have been torn in the rectum. In that case drainage is necessary for the escape of fæces. (3) Those in which there is much oozing of blood from small vessels which you cannot stop during the operation, but which will be stopped in time by the clotting of the blood. If you think more blood will be poured out than the peritoneum will absorb, keep a channel open by which the blood or blood serum

may escape outside. (4) If a cyst containing irritating or infective material, such as a dermoid, a suppurated cyst, or a papillomatous cyst has burst, and you have washed the peritoneum, and want the water holding noxious matter in it to escape, you must provide a way for it to do so. The keeping open a channel by which exuded fluid can be withdrawn from the belly is called *drainage*. Drainage, if not necessary, is bad. It hinders the healing of the wound and so makes hernia more likely. It also keeps open a way for the entrance of microbes. Therefore drain when the need for it is clear, but when in doubt close the wound.

Drainage implements.—The means of drainage usually employed are gauze and indiarubber tubing. If you have used gauze to stop bleeding, the end of the gauze brought out through the wound will serve as a drain. Otherwise, an indiarubber tube, put with its end in the bottom of Douglas's pouch, is the best thing.

Put over the opening a thick pad of wood-wool, Gamgee tissue, or Tillmann's dressing, and bid the nurse change it as often as it gets wet through. Take out the gauze at the end of a week. If an indiarubber tube has been used, cut it level with the edges of the wound, and leave it in, shortening it daily as it is pushed out by granulation tissue.

Gastric catarrh.—As a rule an operation on the peritoneum is followed by gastric catarrh, which lasts nearly a week. The patient is thirsty, and has no appetite. The tongue becomes coated. There is flatulence, and colicky pain in the belly, sometimes severe. The colic is severe because anxiety, the anæsthetic, and the deprivation of food and sleep, lower the tone of the nervous system and make it more sensitive. On the third day this pain begins to improve. Towards the end of the week the tongue cleans, the patient ceases to be thirsty, and appetite returns. This gastric catarrh is a reflex effect of peritoneal irritation. It is more severe after prolonged operations; and more marked after operations in which the peritoneum is opened by the belly wall, than in those in which it is opened by the vagina; why, it is hard to say. It is a frequent accompaniment of pelvic peritonitis.

The after-fate of ligatures.—As a rule the tissues on the proximal side of the ligatured pedicle swell up, meet those on the distal side, leucocytes pass from one to the other, lymph is exuded and adhesions form and bury the ligature,

Fig. 247.—Diagram showing how ligatures may find their way into the broad ligament. (*Lawson Tait.*)

a a, peritoneum; *b c*, tissues embraced by ligature.

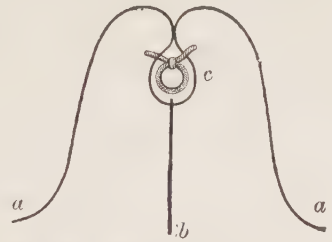


Fig. 248.—Diagram showing folds of peritoneum adherent above ligature. (*Lawson Tait.*)

a a, peritoneum; *b*, tissues held by ligature; *c*, ligature loosened by suppuration.

which is finally absorbed. (Fig. 243.) In a small number, about 3 or 4 per cent. of ovariotomies, according to Lawson Tait,* absorption does not take place; suppuration occurs round the ligature, and pus with the ligature is discharged, either externally through the wound or into a viscus. In the latter case, according to Lawson Tait (whose conclusion was based on a small number of cases), if the stump is on the right side the ligature is discharged into the bladder, if on the left side into the rectum. The mode in which it happens is this:—The ligature is held down by the vessels it embraces. The peritoneum round it swells, and is raised up, first around and then over it, so that it comes to form a tube of inverted peritoneum with the ligature at its base (Fig. 247). The mouth of this tube is

Fig. 249.—Ligature in broad ligament. (*Lawson Tait.*)

a a, peritoneum; *b*, vessel held by ligature; *d*, ligature.

* *Lancet*, May 16th, 1896.

closed at its peritoneal end by adhesions (Fig. 248), and opened at the other end by suppuration, so that the loosened ligature comes to lie in the broad ligament (Fig. 249). Thence it travels to bladder or rectum, as the case may be. A forceps has been known to make its way into the bladder in this way.

CHAPTER LIX.

AFTER-RISKS OF OVARIOTOMY.

1. **Shock**.—People who do not like blaming themselves often ascribe death to "shock." But when from such deaths those due really to hæmorrhage or to peritonitis are subtracted, the remainder due to shock is in the present day small, for ovarian tumours are as a rule diagnosed early. Death from shock only occurs after the removal from exhausted patients of very large and extensively adherent tumours. Death in some such cases may be really due to hæmorrhage, although the amount of blood lost may have been only such as could not have been prevented. What seems a little bleeding may be enough to kill a very exhausted patient.

2. **Hæmorrhage**.—The earliest danger after ovariotomy is that of bleeding. This may be (*a*) from the pedicle, (*b*) from torn adhesions. (*a*) Bleeding from the pedicle comes from slipping of the ligature. It does not happen if the pedicle is properly tied. When it occurs, it is copious, and may quickly kill the patient. Therefore be most careful to see that the pedicle is not bleeding before you close the belly. (*b*) When adhesions are broken down, there may be bleeding from vessels which can be seen, picked up, and tied. But besides this, there is slight oozing which will be stopped in time by clotting of the blood. If the surgeon is over-careful about hæmostasis, and prolongs the operation by sponging and handling the bowels in the search for minute bleeding-points, he will increase the risk of peritonitis to an extent not counterbalanced by the benefit of stopping slight bleeding. On the other hand, the oozing may be of such amount that if not stopped by the surgeon it will kill the patient. Nothing but clinical experience can enable the surgeon to judge when it is safe to leave off looking for bleeding-points, trust to natural hæmostasis, and close the belly. The most dangerous oozing is that which takes place after separation of adhesions within the pelvis, or after enucleation of a tumour under the

peritoneum, a surface being left bleeding from innumerable small points lying in tissue so dense that they cannot be picked up and tied.

The occurrence of bleeding after the operation is shown by the increasing pallor of the face and lips, with quickness and smallness of the pulse. When these indications of internal bleeding occur, reopen the wound, wash out the blood, look for the source of hæmorrhage, and stop it either by ligatures, forci-pressure, or gauze-packing.

Death from hæmorrhage after ovariotomy generally occurs within twenty-four hours.

3. **Peritonitis.**—The danger next in order of time is peritonitis. The symptoms begin in the latter part of the second day. There is vomiting, the stuff brought up being green, brown, or black, and surprisingly abundant. The pulse is quick, wiry, and small; the belly becomes distended; the temperature may rise. These symptoms increase until—usually on the third or fourth day—the patient dies by asthenia. The diagnosis of peritonitis is made from the combination of these symptoms. Either symptom by itself is not of grave moment. I have known a patient with a habitually irritable stomach vomit for a week after abdominal section, and yet get well. The pulse may rise after operation to 120 or 130 and the patient recover. A temperature of 101 or 102 deg. does not necessarily mean peritonitis; nor does a normal temperature negative peritonitis. But the combination of these symptoms makes the forecast bad. This is the common kind of peritonitis. In some cases the symptoms are less acute, and the patient lingers on till the ninth or tenth day, and then dies with extreme distension of the belly. In some of the most quickly fatal cases there is but little pain, while it is severe in those that last longer.

Local peritonitis.—There are yet other cases in which the peritonitis is local. Vomiting and distension are not marked, but there is quickness of pulse—it may go up to 150 or more—and rise of temperature, with pain and tenderness in the lower belly. The illness may be ended by the discharge of sanious fluid or pus, either spontaneously or with surgical aid. These are the cases which have sometimes been saved by reopening the abdomen. But to reopen the

whole wound is an unnecessarily severe measure. The indication for interference is the presence with fever of hardness or swelling underneath the wound, or bulging behind the uterus felt by the vagina. If there is hardness below the wound take out one or two of the lower stitches, open up half an inch of the wound with a probe, and if fluid comes out, put in a small indiarubber drainage tube. If Douglas's pouch bulge into the vagina, cut into it with scissors, and let out the fluid. This is the kind of peritonitis that is prevented by drainage.

Formation of adhesions after operations.—Experience has shown that when the belly is opened shortly after operations from which patients have recovered without any symptoms of peritonitis, peritoneal adhesions are almost always found. Ovarian tumours are often found adherent, although the patient gives no history of illness. This shows that peritonitis is not always the same. It is the process by which the peritoneum reacts to injury. When the injury is mechanical, and consists of cutting, handling, sponging, the pressure of ligatures and forceps, etc., the reaction is triumphant. When the injury consists in invasions by pathogenic microbes, the reaction fails, and the organism dies that the micrococci may live. The adhesions that follow successful operations are in time absorbed; but we know not whether they are *always* absorbed, nor how long it takes for them to be absorbed.

The fact that adhesions follow successful operations bears upon the surgeon's conduct when he finds both ovaries diseased. A second operation soon after the first will not only mean a repetition of the risk, suffering, and expense involved in the first operation, but an additional risk from the difficulty which the presence of adhesions brings. Hence a sensible patient will always wish that, if both ovaries should be found diseased, the surgeon should remove them both, and not leave her with the prospect of a second, and probably more dangerous, operation before her.

Causes of peritonitis.—Fatal peritonitis after ovariotomy almost always comes from neglect of aseptic and antiseptic precautions. This is proved by the fact that, before the work of Lister, about one-third of ovariotomy cases died from

peritonitis; the proportion now is not more than one-twentieth, if as much. Before Lister had shown the cause of blood poisoning after operations, some surgeons used to think that they could predict that certain patients were likely to die if submitted to an operation. I know not of any exact rules for picking out these cases that have ever been formulated and tested. An ovarian tumour is so surely fatal that ovariotomy cannot be postponed or abandoned merely because someone is of opinion (without being able to give a definite reason) that the patient is likely to die. It often happened that patients died in whom the operation was simple and quickly done; while other patients recovered after severe and prolonged operations with but little disturbance. Such cases lead me to think that the old surgeons may not have been altogether wrong: that there may be peculiarities which make one patient more liable to peritonitis than another, just as certain animals tolerate more interference with their bowels than others. If this be so, it is a reason for not telling patients that abdominal section is an operation devoid of risk. The rarity of such cases, and the uncertainty about their existence, is a reason why death should never be attributed to this cause. After a fatal case, every aseptic and antiseptic precaution should be scrutinised with increased vigilance.

It is reasonable to think that the longer the operation lasts, and the more the peritoneum is handled, rubbed, exposed, and chilled, the more it will be damaged, and the less it will be able to oppose the invading microbes. When bowel is long exposed you will see its lustre become dulled, and then it becomes injected; changes which, you can hardly doubt, indicate damage to the epithelium such as favours peritonitis. When the peritoneum is only a little dulled its lustre can be restored by washing it with saline solution. To prevent such damage, if you have to make a long incision to get out a big tumour, as soon as you have got the tumour outside the belly, close with temporary stitches so much of the wound as is not needed for attention to the pedicle. In the early days of ovariotomy rough statistical proof was brought forward to show that the longer the incision the greater the danger. This was because the necessity for a

long incision generally implied a difficult operation. Peritonitis is favoured if dead organic matter is left in the peritoneum; for such matter is good soil for microbes to grow in. Hence the necessity for leaving the peritoneum either dry or containing only clean fluid. It has been said that peritonitis can be prevented and cured by purgation. The cases so cured were probably never in danger.

When a patient has symptoms of peritonitis, the treatment is the same as that of peritonitis from any other cause. Support strength by food. As the tendency to death is by asthenia, help the failing heart with alcohol. If the patient vomit constantly, feed her by the rectum. If there be great pain, give morphia hypodermically in doses as large as necessary. If copious vomiting of green or black stuff distress the patient, washing out the stomach will do no harm, and may make the patient more comfortable. But success in treatment shows that the peritonitis was not caused by organisms of the most virulent kind. When septic peritonitis has begun nothing will save the patient.

The use of anti-streptococcic serum.—Peritonitis is caused by micro-organisms; streptococci are believed to be in this disease the chief. An anti-streptococcic serum has been prepared to combat the cocci. There are many different kinds of streptococci, some very virulent, some little virulent. Therefore a *polyvalent* serum has been prepared from a mixture of different kinds of streptococci. In a case of dangerous peritonitis it is wise to inject subcutaneously this polyvalent serum. But its preparation is not yet so perfected that we can in all cases predict success from its use.

Saline infusion.—There is reason to think that some cases of general peritonitis have been cured by the subcutaneous injection of a large quantity of saline fluid. The best way of doing this is that devised by Barnard.* A saline solution is made by dissolving a teaspoonful of salt in each pint of boiled water. The solution is put in a large jug which has previously been scalded out. An indiarubber tube about four feet in length, weighted at one end, at the other carries the fluid to a glass T-piece. This is connected

* "Clinical Journal," vol. xxii., 1903.

by two further lengths of rubber tubing to two stout brandy syringe needles. This apparatus has all been boiled. The jug is placed about a foot above the level of the patient's body; if it is higher than this the injection gives pain. A syphon action is established by immersing the whole of the tubing in the jug and then clipping the ends. Then the needles are inserted under the skin of the thighs, or under the breasts: the skin having been first carefully rendered as nearly aseptic as possible. Through each needle about a pint of fluid per hour will run into the cellular tissue. In this way fifteen or twenty pints may be injected in twenty-four hours. But after about eight pints have been injected, the patient should be watched lest œdema of the lung be produced. Repeated injections can be given day after day, until the patient is able to keep down large drinks of fluid. The rationale of this treatment is the following: in peritonitis, owing to the vomiting and the little fluid taken, the body is very short of water: without water, protoplasm cannot work, the leucocytes cannot combat the microbes. The injections supply the needed water. While the blood is short of water there is a continuous flow of microbe-laden fluid from the peritoneum into the blood. When the shortage of water is made up, and water in excess supplied, the current is the other way, from the blood into the peritoneum. This is shown by the increased discharge in cases that are being drained. Cases that seemed hopeless have been treated in this way, and have recovered; and there are two reasons for thinking that their recovery was the result of the treatment: first, that great improvement in the symptoms is the immediate effect of the treatment; second, that patients suffering from general peritonitis have been by it kept alive for eight or ten days, and then the symptoms have suddenly disappeared by crisis, and smooth recovery has followed, a mode of termination that follows no other treatment.

A later improvement has been to put the jug containing the fluid about six inches above the patient's body, and deliver the fluid by a long tube into the upper part of the rectum: keeping the patient sitting up, so that the pouch of Douglas is the lowest part of the peritoneum, and a drainage tube in Douglas's pouch.

Intestinal obstruction.—I have mentioned that when the belly is opened soon after recovery from abdominal section adhesions are almost always found. These adhesions usually cause no trouble. Sometimes a bit of bowel adheres in such a way that it gets kinked; this may occur as late as six years after operation.* It cannot be foreseen or prevented. It will be favoured by leaving loose tags of tissue; therefore trim pedicle and omentum so that no such tags are left. Some operators think it may be prevented by covering the end of the stump with peritoneum. It has occurred from the inclusion of bowel in the wound stitches; but this ought to be avoided; the operator should, when he pulls each stitch tight, see that no bowel lies between the stitch and the belly wall.

When intestinal obstruction follows abdominal section the patient usually appears to be going on well during the first two days, or even longer. Then there is vomiting with increasing distension and constipation, though a little fæcal matter present in the bowel below the obstruction may have been passed. With these symptoms there is steadily rising pulse rate, and sometimes a little temperature, and an anxious expression of face. These symptoms follow the vomiting and distension, and do not precede it as in peritonitis. They arise because the patient is being poisoned by ptomaines formed in her bowel, and the urgent thing in treatment is to give exit to the ptomaines. The most effective treatment is to reopen the abdomen, break down adhesions, and liberate the bowel; and this may be undertaken with greater confidence in obstruction after a pelvic operation than in any other form of obstruction, because we know that obstruction after such an operation is nearly always in the sigmoid flexure. But if the patient's condition is very bad, or if examination of the sigmoid flexure fails to reveal the obstruction, it is better not to inflict on the patient the shock of a prolonged search for the seat of obstruction, but to secure a coil of distended bowel in the wound by two stitches, and then open it between the two stitches. This will let out the bowel contents. I have known, after this had been done, not only the patient's condition improve, but the

* Shively, quoted by Doran, "Gyn. Operations," p. 264.

bowels act naturally, and the artificial anus spontaneously close. But if the latter does not happen, when the patient has ceased to be poisoned by ptomaines, there will be little risk in seeking for the seat of obstruction and closing the artificial anus.

Tetanus.—Like any other wound, the ovariotomy incision may be inoculated with the tetanus bacillus. We know too little of the life-history of this organism to be able to predict or prevent the disease. It is one of those risks which prevent you from telling a patient that ovariotomy is devoid of danger. According to Wells it follows in about one case in three hundred.

Pulmonary embolism.—Clotting in veins may follow ovariotomy, and the detachment of a clot and its lodgment in the pulmonary artery may cause sudden death during apparently normal convalescence. We know not why this happens; it is a danger, fortunately rare, which we can neither predict nor prevent. Phlegmasia dolens may follow ovariotomy; it differs in no way that I know of from the disease in the puerperal state; and it brings with it risk of pulmonary embolism.

Foreign bodies left in the belly.—Unmethodical operators have sometimes left things inside the peritoneal cavity—sponges, wool-pads, forceps. When such a thing has got out of sight, covered up with coils of bowel, it is more difficult to find than one not accustomed to abdominal surgery would think. If such a thing is left behind, an abscess will form round it, and the patient probably die. There are a few extraordinary cases published, one in which a forceps worked its way into the bladder; others in which pads were eliminated by the bowel; and another in which a sponge was got rid of by way of the belly wall.* These are fortunate exceptions, not the rule. To prevent such things, always count forceps and sponges.

Fæcal fistula.—In separating adhesions the bowel may be torn. If the injury is to a free coil of bowel, sew up the hole at once with Lembert's suture. When there are pelvic adhesions, the rectum may be torn so low down that sewing up the hole is practically impossible. In that case

* *See* Bland-Sutton, "Surgical Diseases of Ovaries, etc."

make the pelvis as clean as you can and put in a drainage tube. If there be nothing else to cause peritonitis, the opening will close and the patient do well. Cases have occurred in which the sutures closing the wound have been passed through bowel,* but a careful operator will avoid this. In some cases perforation of bowel has occurred as a result of intestinal obstruction.

Cystitis.—This is apt to occur if the catheter is used often. The common explanation is that it is set up by organisms introduced by a dirty catheter. To prevent it, instruct the nurse always to pass the catheter by the aid of sight (so that its point may not wander about); before passing it to wipe the vulva with wool soaked in 1-2000 sublimate solution; to lubricate the catheter with a solution of corrosive sublimate in glycerine 1-2000—not with oil; to wash the catheter immediately after use, running a stream of warm water through it; and to keep it lying in a 1-2000 solution of sublimate. But cystitis sometimes occurs notwithstanding that every precaution seems to have been taken.

Parotitis.—There is a close relation, the nature of which we understand not, between the genital organs and the parotid gland. The occasional metastasis of mumps to the genital gland is well known. Parotitis may occur after any injury or disease; but it is ten times commoner after injury or disease affecting the pelvis than after disease or injury of other parts.† When occurring after injury not affecting the pelvis, it is generally pyæmic, accompanied with other abscesses elsewhere, but that which arises after a pelvic trouble, though it might be pyæmic, yet usually is not. Ovariotomy is one of the pelvic troubles which may be followed by parotitis, we know not why. It is supposed to be due to infection, but we know not what is the infective agent, whence it comes, and why it affects the parotid gland and no other part. It has no fixed period of incubation, though it usually comes on within three weeks. Sometimes there are rigors with high fever, but generally not. Usually one gland only is affected, but both may be. The gland suppurates in rather more than half the

* Doran, "Gynæcological Operations."

† *See* an excellent paper by Stephen Paget, *Brit. Med. Jour.*, vol. i. 1887.

cases. Suppuration and high fever occur in the old, the weak, and those who, from some other cause, are doing badly, and are likely to die. Death solely from parotitis is rare. When the gland has suppurated, it may burst into the auditory meatus, or into the mouth, or burrow back over the mastoid process, or down into the neck.

The **treatment**, according to Paget, is to let out pus early. Even if an incision be made before pus has formed it will give relief.

CHAPTER LX.

SOLID ABDOMINAL TUMOURS.

The commonest solid abdominal tumour in a woman is a uterus enlarged by fibroids. In Chap. XXVIII. I have described the clinical history and treatment of those fibroids in which bleeding from the uterus is the symptom which attracts attention and demands treatment. In this chapter I describe the important symptoms and effects of those which grow on the peritoneal surface of the uterus (Fig. 250), which do not affect the cavity of the uterus, and which therefore do not cause increased bleeding.

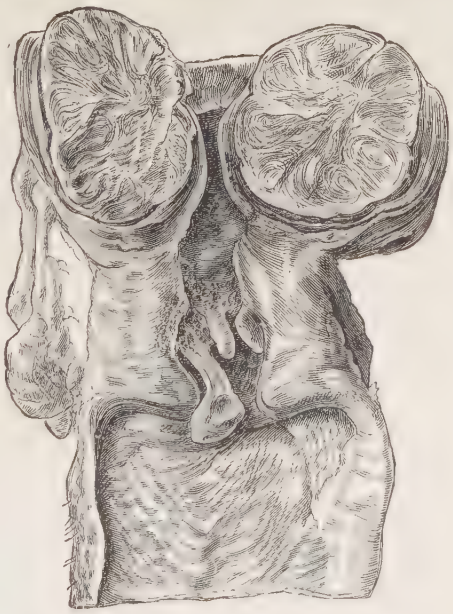


Fig. 250.—Uterine fibroid beginning to bulge on peritoneal surface. Mucous polypi in cervical canal. Two thirds natural size. (*After R. Barnes, from a specimen in the Museum of St. Thomas's Hospital.*)

Subserous fibroids.—Most subserous fibroids give no trouble whatever to their owners, and are found out accidentally on the *post-mortem* table. In a few cases they give rise to serious trouble. The troubles they cause are of two kinds, arising from:

(A) Their growth.

(B) Their degeneration.

(A) **The size to which they grow.**—As a rule, nodular subserous fibroids grow slowly. They grow to a certain size, and then stop growing. We know not why they grow, or why

they stop growing; nor do we know what regulates the size at which they stop growing. They generally stop growing before they have become big enough to cause serious trouble, and they often stop growing long before the menopause. But in some few cases they go on growing to an enormous size. Some of the biggest tumours on record

Fig. 251.—Mass of uterine fibroids. Two-thirds natural size. (*After R. Barnes, from a specimen in the Museum of St. Thomas's Hospital.*)

have been masses of subperitoneal fibroids (Fig 251). These cases are the exceptions. We know not why they grow so big; we cannot foretell such enormous growth.

An enormous tumour causes suffering by its mere size and weight. It may damage other parts by its pressure, and thus indirectly endanger life. It raises the pressure within the belly, makes the return of blood from the lower extremities difficult, and thus may cause œdema of legs; and even phlegmasia alba dolens has been reported. It throws strain on the heart, and may lead to cardiac dilatation and degeneration. When the stomach is full, the tumour may press upon it, and cause vomiting. The tumour may hinder the descent of the diaphragm, and thus make the breath short. A big tumour prevents the patient from taking exercise, and thus leads to degeneration of muscle. These consequences of great bulk not

only call for operative cure; unfortunately, they do more: they add to its risk.

Fibroids fixed in the pelvis.—The foregoing paragraph describes consequences which may result from a big tumour free to move within the belly. But the tumour may not

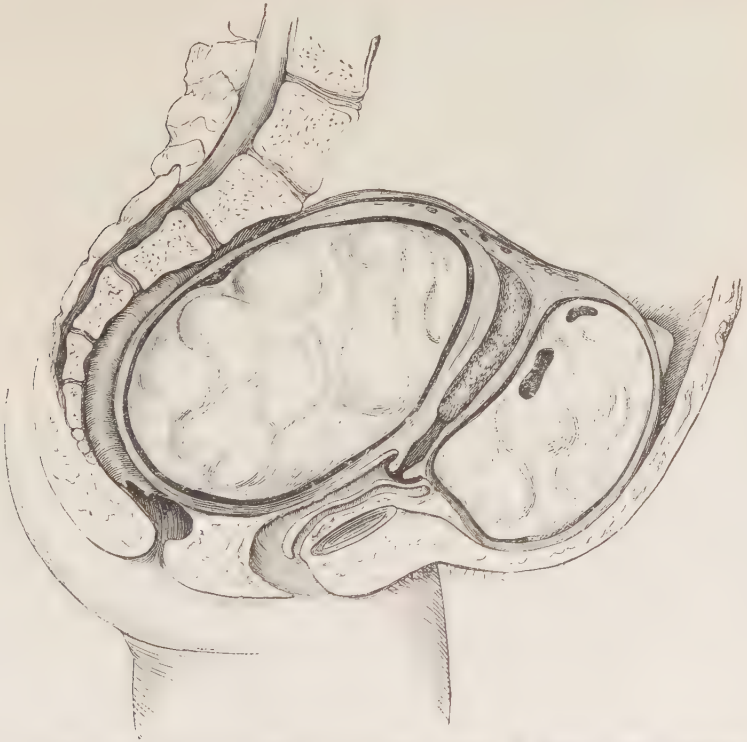


Fig. 252.—Fibroid incarcerated in pelvic cavity. *(After R. Barnes, from a specimen in the Museum of St. George's Hospital.)*

be free to move; it may be fixed within the pelvis (Fig. 252). In that case a smaller tumour may give grave trouble There are three ways in which uterine fibroids may become fixed in the pelvis:—(1) A uterus containing a big enough fibroid in its fundus may get retroverted and incarcerated under the sacral promontory, just like a uterus that contains an ovum. (2) A patient whose uterus contains a fibroid may become the subject of perimetritis, and thus the fibroid be fixed by adhesions. The perimetritis may or may not be

caused by the fibroid. I shall subsequently examine the ways in which fibroids cause perimetritis. (3) The fibroid may begin low down in the uterine wall, and grow outwards into the broad ligament.

Whatever be the reason why the tumour is in the pelvis, as it grows it more nearly fills the pelvic cavity, and at length may become so tightly wedged in it that pressure effects follow. (1) It may press on some part of the *urinary passage*, either urethra or ureters, and lead to bladder irritation, or to retention of the urine; and if the latter, cystitis, pyelitis, and death from uræmia may be the consequence. (2) The *rectum* may be pressed upon. Difficult and painful defæcation, hæmorrhoids, even obstruction of the bowels so great as to demand colotomy, have been produced by such pressure. (3) The tumour may press upon the *nerves* of the sacral plexus, and pains, tingling, or numbness running down the legs may result. It is conceivable that local paralysis might follow, but I know of no instance. (4) The tumour may become gangrenous. This possibility has been denied; but a specimen by Robert Barnes, in the museum of St. George's Hospital* (Fig. 252), seems to prove it.

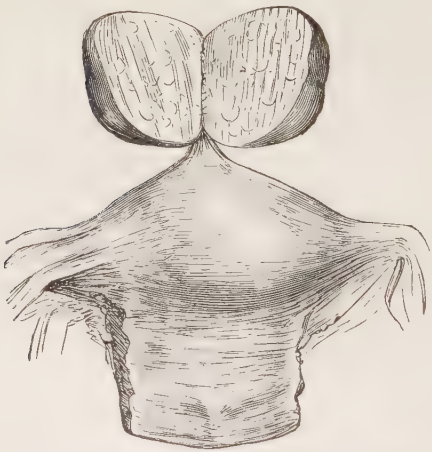


Fig. 253.—Subperitoneal fibroid attached by thin pedicle. Half natural size. (*After R. Barnes, from a specimen in the Museum of the London Hospital.*)

(B) **Their degeneration.** (*a*) *Obliteration of pedicle.* When a fibroid projects from the uterine wall under the peritoneum, the contractions of the uterus tend to extrude it altogether from the uterine wall, so that it may finally be covered only by peritoneum, except at one place, where a stalk joins it to the uterus. This stalk may be thick or

* No. 16*i*.

thin, long or short (Fig. 253). The tumour and the uterus will be more or less independently movable, according to the length of the stalk. A big tumour with a short stalk may so pull up the uterus that the cervix gets out of reach. It may so pull the body of the uterus from the cervix that

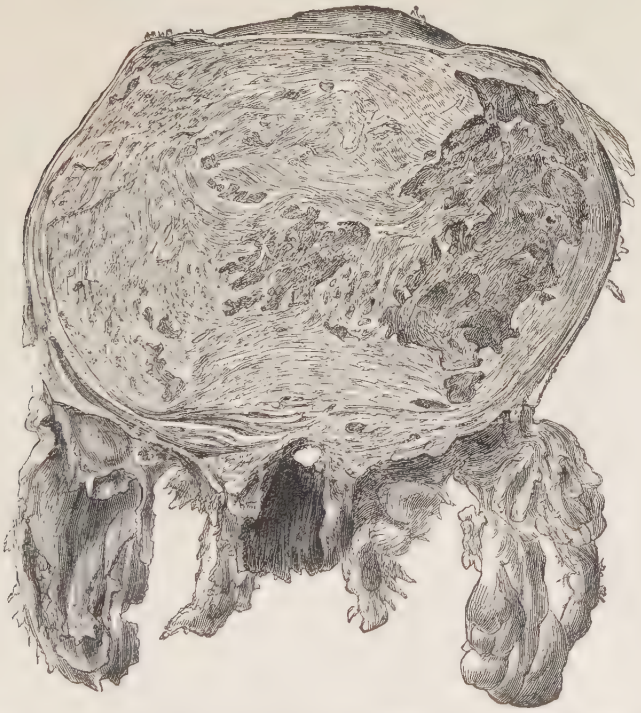


Fig. 254. —Uterine fibroid that has undergone calcareous degeneration. Half natural size. (*After R. Barnes, from specimen*, 9,940[3], *in the Museum of St. Thomas's Hospital.*)

part of the canal may get obliterated, the cervix at this part being converted into a thin fibro-muscular cord. It may twist the uterus, and thus block up its canal. The fibroid receives its blood supply through the stalk. The thinner the stalk, the smaller the vessels. If very thin, the tumour may *atrophy* or *calcify*. The latter term means that calcareous salts are deposited in the tumour (Fig. 254). If the pedicle be thick, it may contain large vessels. It may become twisted, the circulation through these vessels may be

stopped, and the fibroid become *gangrenous*.* Peritonitis may occur near a fibroid attached to the uterus by a slender stalk; the tumour may in consequence become adherent to some other part, and thus may get pulled away from the uterus, be detached, and henceforth derive its nourishment from the object of its new attachment.

The foregoing are possible incidents in the life of a fibroid with a stalk. But whether stalked or not, hard subperitoneal fibroids often become the subjects of (*b*) *softening*. Part of the tumour breaks down into a pulp. The nature of this process is not well understood. There is a zone of slight inflammation round the softened spot, but the pulp it contains is not pus. The peritoneum covering the softened spot may give way, and the pulp escape into the peritoneum, and set up peritonitis. This is generally local and adhesive, but may be suppurative, and become general. McClintock was of opinion that when subperitoneal fibroids cause death, it is more often by peritonitis than in any other way; and I think him right.

(*c*) *Suppuration*. There are rare cases in which a fibroid suppurates. There is not merely a softened spot containing pulp, there is a hole in the wall of the tumour, leading to a cavity in its interior, out of which pus (or, at least, pus-like fluid) pours copiously. I have seen two such cases. Sir F. Treves removed the uterus of one, and placed it in the museum of the Royal College of Surgeons (Fig. 255). An abscess in a uterine fibroid differs from one seated in natural tissues, in being bounded by a hard fibrous wall, which has little tendency to close. It has been said that in these cases the fluid is not true pus. This objection did not occur to those who saw the thick creamy fluid pouring out, and therefore microscopic examination of the fluid is wanting in the reports of these cases. But such cases are clinically suppuration; for if not cured, they tend to destroy health and life, as suppuration does, by leading to death by hectic fever or lardaceous disease. These cases are so rare that we know nothing as to why suppuration occurs.†

(*d*) *Sloughing*. I have mentioned that a subperitoneal

* *See* a case quoted in *Brit. Med. Journal* epitome, Feb. 20, 1897.

† For references to such cases, *see* Gusserow.

fibroid may be detached by the giving way of an atrophied pedicle. Such a fibroid is generally itself atrophied, bloodless, and it may be calcified. It may lie loose in the belly, like a loose cartilage in the knee-joint, and be innocuous. Besides this, there are cases in which a fibroid sloughs in the form of a soft mass of loose fibrous tissue. (I have referred to this at p. 426.) Such a mass does not putrefy,

Fig. 255.—Fibroid with suppurated cavity in its interior. (*From specimen*, 4,607B, *in the Museum of the Royal College of Surgeons.*)

because putrefactive germs do not get access to it. Suppuration takes place round it, and the abscess may burst, and the slough be discharged either through the abdominal wall or into a viscus, unless, which in the present day is more likely to happen, the surgeon intervenes.* If not rescued by surgery, most such cases die. They are so rare that we know not the causes of such sloughing, nor the order of events in their clinical history.†

(*e*) *Fatty degeneration.* When a fibroid softens and breaks down, fat globules are found among the detritus. Spots of softening may be found not only under the peritoneum, but scattered through the substance of the tumour.

* *See Lancet*, Dec. 8, 1894.

† For references to cases of suppuration and gangrene, *see* Hartmann and Mignot, "Annales de Gynéc.," June, 1896.

This is only a part of the change that has been described at p. 838. But it is said that fibroids are sometimes cured by fatty degeneration and absorption. It used to be said that the puerperal uterus underwent fatty degeneration, and that fibroids likewise, during childbed, underwent fatty degeneration. More accurate observations have shown that fatty degeneration of the uterus does not take place; and we have no evidence of the alleged cure of fibroids by fatty degeneration. Fatty change in fibroids has been seen; but it is very rare—not a thing which commonly occurs in childbed.

(*f*) *Fibro-cystic change.* Large spaces are often found within fibroids containing mucoid fluid. Tumours containing such spaces are commonly called "fibro-cystic" tumours. The spaces are not like most cysts, cavities with a definite wall, but are mere irregular spaces produced by the softening and liquefaction of solid tissue. This softening generally implies an abundant blood supply; and, therefore, these tumours often grow fast. Spaces too small to alter the physical signs given by the tumour are common, large spaces rare. But the liquefaction may go so far as to convert the tumour into a bag of fluid with a comparatively thin wall, which fluctuates (see Fig. 226), and then diagnosis may be difficult. We know nothing as to why this change takes place; we can neither predict nor prevent it.

(*g*) *Malignant degeneration.* Fibroids may become invaded by *cancer.* I know not that the presence of fibroids in a uterus in the least increases its liability to cancer. But if a uterus which contains a fibroid becomes the subject of cancer, the cancer, if it be near the fibroid, will invade it, just as it does any other tissue. There is some reason to think that fibroids may become the seat of *sarcomatous* growth. I have seen a case in which a bleeding fibroid had dwindled and ceased to bleed for years after oöphorectomy, and then began to grow rapidly. But it is very difficult to distinguish microscopically between an inflamed fibroid and sarcoma. If fibroids become sarcomatous, we know not why, or in what circumstances.

In brief, the ways in which hard subperitoneal fibroids threaten life are by mechanical pressure—either of very big

tumours in the abdominal cavity, or smaller ones wedged in the pelvis: or by degenerations which cause peritonitis.

Diagnosis of subperitoneal fibroids. — In most cases this is easy; in some difficult; in a few impossible. In most cases there is a tumour made up of hard round lumps, which is movable, and moves with the cervix uteri. Such a tumour can hardly be anything except a mass of subserous fibroids.

Fibroids or inflamed uterine appendages? — When inflammation of the ovary or Fallopian tubes has lasted long, and led to the formation of a thick-walled suppurated cavity—a suppurated ovarian dermoid, or a large pyosalpinx—you will find a hard lump fixed in the pelvis by the side of the uterus. Then it will be difficult, and may be for a time impossible, to say whether the lump in the midst of the inflamed peritoneum is a fibroid or a pus sac. The following are the helpful points:—

FIBROID FIXED BY PERIMETRITIS.	PUS SAC WITH THICK WALL.
Pain only severe during acute illness.	Pain often severe; its effects upon nutrition and facial expression visible.
Severe chronic pain rare.	Pain long persisting.
Symptoms quickly improving with rest in bed.	Slight relief only following expectant treatment.
With time tumour becoming more defined and more movable.	Not so.

Fibroids or malignant ovarian tumour?—When fibroids are small, grow from the side of the uterus, and there has been perimetritis, so that they are fixed, diagnosis may be difficult. A malignant ovarian growth forms a fixed hard lump at the side of the uterus. The points in diagnosis between these conditions are the following:—

FIBROID FIXED BY PERIMETRITIS.	MALIGNANT OVARIAN GROWTH.
A history of acute illness with pelvic pain.	No such history.
Patient, if wasted during acute illness, has gained flesh since.	Progressive wasting.

FIBROID FIXED BY PERIMETRITIS.	MALIGNANT OVARIAN GROWTH.
Growth slow.	Growth rapid.
Seldom œdema of legs or ascites.	Œdema of legs and ascites early.

Subperitoneal fibroids or ovarian cysts?—The broad rule, that fibroids are solid and cysts fluid, generally makes mistake between them impossible. But it is possible with small tumours. Ovarian multilocular tumours contain, besides the big cavity, agglomerations of small cysts, and these latter, felt through the abdominal wall, seem solid lumps. It is possible for these lumps to be all situated in front of the tumour, the big cyst, which would give fluctuation, being behind. If the cyst is not so big that the fluctuating part can be easily felt in the flanks, the solid lumps in front may give the impression that the tumour is fibroid. But such a condition is not frequent, nor is the mistake grave (except for the doctor's reputation), for its only result would be to postpone operation for a time. In time the ovarian tumour will grow big enough for fluctuation to be easily felt, and the error will be corrected. With fibroids the uterine canal is lengthened: with ovarian tumours not. This rule generally holds good, and is useful in diagnosis. Measure the uterine cavity with the sound. But fibroids growing from the fundus uteri may not lengthen its cavity, and ovarian tumours sometimes so drag on the uterus as to elongate it. In the latter cases the altered position of the uterus is generally easily perceived.

Rare forms of malignant disease of uterus.—The only other solid tumours springing from the cervix uteri and rising out of the pelvis are a very rare form of cancer attended with enlargement of the uterus, which I have described in Chap. XXVII. In this disease there will be the symptoms of cancer, and you will make the diagnosis by examining the interior of the uterus. Sarcoma of the uterus may form an abdominal tumour, but it is so rare that we do not know how to distinguish it from a fibroid or an ovarian tumour before the belly is opened. In a case under my care, the tumour so fluctuated, from effusion of blood into it, that the late Sir A. Clark took it for an ovarian

tumour; and I did the same (Fig. 227). When the belly has been opened, the only macroscopical difference that I know of between a fibroid and sarcoma is the greater vascularity and therefore deeper colour of sarcoma.

Physical signs of hepatic, splenic, and renal tumours.—The belly may be occupied by a solid tumour of the liver, spleen, or kidney. Either of these organs, when enlarged enough, may reach down to the pelvic brim. But they do not rise out of the pelvis. By bimanual examination you can get your hand down into the pelvis below them, and grasp the uterus and establish its independence of the tumour. An enlarged liver rises and falls with respiration. An enlarged spleen has a sharp edge with a notch in it looking to the right side. I have felt a spleen so enlarged after an accident as to reach down to the pelvis. A year afterwards this spleen was much smaller, and lay in the pelvic brim. Gourand* has recorded a case of a spleen similarly displaced. Childe† has collected some cases of splenic cysts produced by haemorrhage within the capsule. An enlarged kidney has the colon in front of it. This bowel may contain gas, and be resonant; or it may be felt as a soft band running from above downwards over the tumour.

Solid ovarian tumours.—A solid lump in the belly, arising out of the pelvis and connected with the uterus, is in more than 90 per cent. of cases a uterine fibroid. It may be an ovarian fibroma or sarcoma. Subperitoneal fibroids, attached to the uterus by a stalk, are rare. Fibroma of the ovary is also rare. In each case you will feel a hard rounded tumour, distinct from the uterus, but yet tethered to it. And it may be impossible to say whether the tumour is a large subserous fibroid with a narrow stalk or a solid ovarian tumour. If there be no ascites, and the patient is elderly, the probability is immensely in favour of the former. Large subserous stalked fibroids are rare in young women, and solid ovarian tumours are often accompanied with ascites. A mistake either way is unimportant, for the indications for treatment in the two conditions are the same. It may be laid

* "Bull. et Mem. de la Soc. Anat. de Paris," Mai, 1900.

† *Brit. Med. Journal*, December 23, 1905, p. 1631.

down as a general rule that a solid, movable tumour, attached to the uterus, with ascites, in an otherwise healthy woman, had better be soon removed.

Dermoid ovarian cysts, when small, feel like solid tumours, because their walls are thick, and often contain solid lumps, so that a fluctuation wave is not so easily felt as in a thin-walled tumour. Sometimes they contain fat in pellets, so that fluctuation is not present. If solid lumps in the cyst wall are in front, fluctuation may not be felt, even though the cyst contain fluid fat, and is so large that fluctuation ought to be felt. You then have an apparently solid tumour, separate from the uterus, but connected with it, movable, without pain, ascites, or cachexia, and not nodular. These characters distinguish it from a malignant tumour. I know not how you are to distinguish it from a sarcoma or fibroma of the ovary.

Fæcal tumours.—Hard fæces in the bowel may form a solid swelling, which may be taken for a tumour of another kind—either a fibroid or an ovarian tumour. Sir Spencer Wells* relates a case in which "the abdomen was distended beyond the ordinary size at the full term of pregnancy, and apparently by a well-defined solid tumour." It was "composed of the colon and cæcum enormously distended." I have known operation recommended for a tumour supposed to be ovarian, in which the correct diagnosis, that of a fæcal mass, was made by the late Dr. H. G. Sutton. The features by which fæcal tumours may be recognised are (1) that, though apparently solid, they present some degree of resonance on percussion; (2) that they can be indented with the finger, and, the tumour not being elastic, the indentation persists. The diagnosis is confirmed by finding the tumour disappear with the abundant action of aperients. The best aperient to disintegrate a large fæcal mass is sulphate of magnesia, ʒj every hour.

Fibroids of the anterior abdominal wall.† — These tumours require mention here, because they have been taken for uterine fibroids. They are rare; they are much commoner

* "Ovarian and Uterine Tumours."

† *See* Labbé and Remy, "Traité des Fibromes de la Paroi Abdominale," Paris, 1888. A full account of the subject.

in women than in men, and in women who have had many children than in those who have not been pregnant. They develop during the years of sexual activity. From these facts it would seem likely that the causes of such growths are to be found in incidents connected with the reproductive function. It is believed that they sometimes arise from rupture of muscular fibres during labour, leading to extravasation of blood and exudation of lymph, which become organised into a mass of fibrous tissue; and this, from some unknown cause, grows bigger, a process allied to keloid growth in scar-tissue. When situated high up in the belly, these tumours are often firmly united to the peritoneum, because over the upper two-thirds of the recti muscles the peritoneum is normally closely blended with the transversalis fascia, and these tumours commonly grow in the transversalis fascia. They are generally, not always, single, and are never in the middle line. They are usually smooth on the surface, rounded, flattened from before backwards, and for the most part encapsuled. Unless large, they are not very vascular. The largest on record weighed over 35 lb., and required an incision 12 inches long for its removal. They are made of white fibrous tissue, and are subject to the same kinds of degeneration as uterine fibroids—œdema, breaking down into cyst-like cavities, hæmorrhage, calcareous deposit. After removal they do not recur.

Clinical history.—Fibroids of the abdominal wall cause no symptoms until they are big enough to do so mechanically. They form firm mobile tumours, which, when pinched up, feel as if they had a pedicle. This feeling as if a pedicle were present has led to mistakes in diagnosis and treatment, the common error being the taking of these tumours for uterine fibroids. Such error is especially likely if the patient be pregnant, for then the enlarged uterus will be felt, and the fibroid of the abdominal wall will feel like a lump springing from the surface of the uterus. The diagnostic sign is that a tumour of the abdominal wall *becomes fixed when the muscles contract.* This sign establishes its relation to the belly wall. Its separateness from the uterus, or, rather, viscera, can be demonstrated by putting the patient on her knees and elbows, in which position the belly wall is re-

laxed, and gravity makes the tumour sink downwards, away from the viscera.

The diagnosis between fibroids of the abdominal wall and other tumours plainly seated outside the belly cavity, such as hernias, fatty tumours, gummata, abscesses, etc., depends not on features special to women, and is therefore beyond the scope of this work.

Treatment.—The only treatment of a fibroid of the abdominal wall is its removal. If it be found closely united to the peritoneum, the peritoneum should be removed with it. There should be no attempt to dissect off a layer of the tumour in order to preserve the peritoneum. The details of the operation are not special to women, therefore I do not describe them.

CHAPTER LXI.

THE TREATMENT OF SUBPERITONEAL FIBROIDS.

THE only treatment of hard subperitoneal fibroids is by operation. As they are outside the muscular wall of the uterus, they are not affected by the muscular contractions which ergot produces. As they cause not bleeding, electrical cooking of the endometrium does no good. The conditions which call for operation have been described in the preceding chapter.

The treatment of subperitoneal fibroids.—The treatment required depends upon the kind and amount of trouble that the tumours are causing. Consider the various conditions in which a patient with subperitoneal fibroids may ask for advice.

(1) **Fibroids not causing symptoms.**—The size of the tumour has attracted the patient's attention, but she is not suffering in any way from it.

No drug has any influence upon the growth of subperitoneal fibroids, nor has electricity. The only effective treatment is surgical treatment. The alternative is letting the tumour alone. Some expert operators have urged that every fibroid should be removed, whether causing trouble or not, on the ground that if it be not causing trouble now it will by-and-by. The decision must rest with the patient. Your duty is to put before her the probable consequences of letting the tumour alone, and the probable consequences of having it removed. She must decide.

What are these consequences? Suppose that she lets it alone. Her belly will remain big, and it may get a little bigger. It is possible that it may get very big It is also possible that degeneration of the tumour may set up inflammation, or that it may get incarcerated or adherent in such a way as to interfere with other organs by its pressure. But these things are very unlikely. The chances are that an increase of an inch or two in her waist measurement will be all the trouble that her tumour will give her.

Suppose that the tumour is removed. Some mishap during the operation may kill her in a few days. This is unlikely, because when the tumour is small and the peritoneum healthy, the operation is easy and safe; but it is possible. In any case, the patient will have three weeks in bed, and it will be months before she regains the tone of her nervous system. The days following the operation will be very unpleasant ones, marked by vomiting, thirst, pain, and anxiety. After she gets up she will have a scar, a weak place in the belly wall, which even years afterwards may give way, and allow a hernia to protrude. If she be of an age at which some years of menstruation may yet be expected, the menopause, with atrophy of the remaining genitalia, will come on prematurely. None of these things are desirable. What does she gain by submitting to all this? Nothing but a slightly smaller waist, and security against some contingent but improbable dangers. I think a sane woman will prefer to wait as she is.

(2) **Fibroids causing symptoms by their size.**—The tumour is so big that it causes discomfort, makes the patient short of breath, unwieldy, unable to take exercise.

Removal by operation is the only cure. What will follow letting it alone? Matthews Duncan, a physician who did not favour rash surgery, says: "A woman with an enormous fibroid will not live to be an aged woman."* The patient will be liable to dangerous pressure symptoms, and to the consequences of degeneration of the tumour. Even if these do not arise, she will lead a life of unhealthy inactivity. Degenerative changes in the heart will be favoured, and the danger from any disease which throws strain on heart and lungs will be increased. There are thus not merely contingent risks, but actual and persistent evils. In the present state of abdominal surgery, the risk to life in the removal even of a big fibroid is small, and the possible undesirable after-consequences are less grave than the constant presence of a great tumour. A well-advised patient will therefore welcome relief by operation.

(3) **Fibroids incarcerated in the pelvis.**—If a fibroid is causing pressure symptoms through being locked under

* "Clinical Lectures," 4th edition, p. 330.

the sacral promontory, the first thing is to push it up. Any operative treatment must be preceded by making the tumour accessible. Such tumours can generally be pushed up manually, if the patient is anæsthetised; or the pressure of a dilating bag in the vagina may be used. This is disagreeable to the patient, but effective. When the tumour is lifted out of the pelvis pressure symptoms will cease. The question of further interference must be settled by the considerations which apply to tumours in the abdominal cavity.

(4) **Fibroids adherent in the pelvis, or growing into the broad ligament.**—These cases need separate consideration, because in them operative cure is more difficult, and therefore more dangerous than in fibroids projecting into the abdominal cavity and freely movable. When fixed by peritonitis, it is difficult to say how much the symptoms are due to the tumours and how much to the peritonitis. It is infinitely rare for a small fibroid fixed by adhesions, or by its place of growth, to cause any danger to life or health, although it may cause some local disagreeable symptoms. Therefore advise patients with such tumours to let them alone. As to exceptional cases, rules cannot be laid down.

Choice of operation.—If operative treatment of subperitoneal fibroids is decided upon, the operator must not finally decide what operation he will do till after he has opened the belly and found out the relations of the tumour. One of four operations may be done.

1. **Oöphorectomy.**—When this is done, as a rule fibroids dwindle in size, and hæmorrhage ceases. When this fact was discovered by Trenholme and Lawson Tait, the methods of hysterectomy were imperfect, and therefore oöphorectomy was much less dangerous. Hence for a time oöphorectomy was often performed for bleeding fibroids; and by some it is still performed. But at the present day the body of the uterus can be removed as safely as the ovaries. Oöphorectomy occasionally fails to stop bleeding; there is some slight reason to think that a fibroid uterus which has been made to atrophy by removing the ovaries may become the seat of sarcomatous growth; and oöphorectomy, when it stops bleeding, also brings with it the unpleasant accompaniments of the climacteric, which the patient, if young, may

feel very acutely. For these reasons I advise against oöphorectomy for fibroids, except in a case in which, from some cause, such as extensive growth into the broad ligament, there is exceptional difficulty in removing the uterine body, while the ovaries can easily be removed. But such a case is very rare.

2. **Myomectomy.**—This means taking out the fibroid or fibroids, and leaving the uterus, ovaries, and tubes behind. If the patient is young, so that it is important not to rob her of possible maternity, this is the ideal operation. If she is so old that pregnancy cannot occur, there is no advantage in leaving behind the body of a uterus which may contain other small fibroids, not perceivable at the time of operation. This operation can be done when a sub-peritoneal fibroid is pedunculated, or projects on the peritoneal aspect of the uterus. The details of the operation vary indefinitely according to the thickness of the pedicle, if present, or the size and situation of the tumour or tumours. The principles of the operation are the following:—

(1) If there is a pedicle, the tumour should be detached by cutting out of the pedicle, close to the uterus, a wedge-shaped piece, so that then the peritoneal surfaces of the two flaps left can be sewn together.

(2) If there is no pedicle, an incision should be made over the tumour along its equator, till its capsule is reached. Then the tumour can be, with the fingers, shelled out of its capsule. This can generally be done easily.

(3) Sutures are now applied in such a manner as to (*a*) constrict the bleeding vessels, and (*b*) bring together the peritoneum bounding the bed of the fibroid. How best to put in these stitches depends upon features special to each case.

(4) If the fibroid or fibroids that have been enucleated have left behind them cavities so large and vascular that the aims above mentioned cannot be satisfactorily attained, the attempt to save the uterus should be given up, and the operation completed by amputating the body of the uterus in the manner presently to be described. If the tumour was on one side of the uterus, and haemorrhage is difficult to stop, you may be able to check it and yet save the uterus, by putting a ligature round the broad ligament and uterine artery, on that side only. I have done this with success.

3. **Amputation of the body of the uterus: often spoken**

of as hysterectomy.—The abdomen is opened in the same way as in ovariotomy, in the middle line, and over the most prominent part of the tumour. Make the first incision long enough to enable you to bring the tumour out of the belly. You will do this more easily if you fix it with Tait's or Greig Smith's "myoma screw." When the tumour is outside the belly, the neck of the uterus fills the lower end of the wound. The upper part of the wound will gape, and bowels may protrude. Put in one or two of the stitches with which the abdominal wound will be closed, and hold them temporarily together with artery forceps, or tie them so as to keep the wound closed while you deal with the tumour.

The next step is to *tie the broad ligaments.* Hold up one ligament, look through it, and choose a place near the uterus and low down, where the ligament is not traversed by a big vessel. At this place push a closed artery forceps through the ligament (preparing the way for it, if necessary, by a blunt pedicle needle). Open the forceps, widely separate the blades, and withdraw it, thus tearing an opening about an inch long. Through this opening pass two ligatures. See that they are not interlocked, and with them tie tightly the broad ligament near the uterus and near the pelvic wall, leaving at least an inch of tissue between them. Divide the broad ligament with scissors midway between the ligatures. Do the same on the opposite side. Tie each round ligament near the inguinal canal, and cut through it on the uterine side of the ligature. Your assistant can now lift the tumour higher up out of the pelvis. Snip through the peritoneum with scissors along a line running horizontally about half an inch above the vesico-uterine pouch. Strip it off the uterus below this line by pressing it downwards with a sponge. Then *tie the uterine arteries.* Put your finger and thumb down the side of the cervix, so as to grasp the broad ligament between them, and feel for the pulsation of the uterine artery. Having identified the uterine artery, pass a ligature by a blunt, much-curved needle through the tissues below the artery, keeping close to the cervix, so that you may not include the ureter. Do not try to isolate the uterine artery by dissection. Guide the ligature by the finger and thumb

which hold the beating artery between them. Tie it as tightly as you can. Do the same on the opposite side. This ligature of the uterine artery is the cardinal point in the operation. It was introduced by Stimson in 1889.

If these things have been properly done, the main blood supply of the uterus has been stopped. With a scalpel cut away the bulk of the uterus, leaving a stump about three inches long. If the arteries have been properly tied there will be no bleeding (after the escape of the blood already in the uterus) except such few drops as can get to the uterus through collateral channels. This attained, the next thing is to trim and suture the stump. Cut away superfluous tissue by an incision in front of the uterus, beginning about an inch above the os internum and going downwards and backwards, another behind, beginning at the same point and going downwards and forwards, the two incisions meeting at or a little above the level of the os internum, thus excising a wedge-shaped piece, and leaving a stump formed of an anterior and posterior flap. If a little bit of the corporeal endometrium is left, its owner will still menstruate. Bring these flaps together. If apposition be not perfect, trim away fibro-muscular tissue until you can bring them together easily. This done, sew the flaps together by folding one flap over the other, as in the diagram (Fig. 256), in such a way as to have the stump covered with peritoneum. Do this so thoroughly that no gap may be left, but the stump be covered with a continuous sheet of peritoneum. When you have finished this, see that the peritoneum is dry and clean, and that no bleeding is going on. Then close the abdominal incision as after ovariotomy.

Fig. 256.—Diagram showing mode of stitching cervical stump.

The operation just described is one of the simplest and

safest in abdominal surgery. Its mortality ought not to exceed that of ovariotomy. The condition necessary for its easy and safe performance is that the cervix shall not be involved in the growth. If the cervix is free and you put the ligature close to the uterus, you will run no risk of including the ureter.

You may have to deal with tumours growing out from the sides of the uterus into the pelvic cavity, so as to much narrow the space in which you have to feel for and ligature the uterine arteries, and in that case there will be danger of including the ureter in the ligature. And the tumour may prevent you from reaching the uterine artery. In such a case the best course, if possible, is first to tie and divide the broad ligaments, and then enucleate the tumour or tumours which fill up the pelvic cavity. When this is done you will have plenty of room to feel for the uterine arteries and tie them without endangering the ureters.

Supposed necessity for sterilising the cervical canal. — Some people think it needful to do things to the vagina and cervix uteri to make them "aseptic." The investigations of bacteriologists show that in healthy women the lower part of the vagina swarms with micro-organisms; that there are very few in the upper part of the vagina, and none inside a healthy uterus. Some hold further that the cervical secretions destroy bacteria.* If these observations are to be trusted, nothing is required to make the healthy cervix aseptic, for it is aseptic already. The microbes so abundant in a healthy vagina are not morbific. A wound in it heals without fever if it is kept clean. Washing away the discharge is enough to secure this without taking trouble to destroy germs. Operators who apply no preliminary treatment to the vagina, and take no pains to sterilise the cervical canal, get as good results as those who do.

4. **Hysterectomy: so-called pan-hysterectomy.** — In the last few years many surgeons have come to think that removal of the whole uterus, cervix as well as body, is better than amputation of the greater part of the body of the uterus. There are some cases, those in which the fibroid grows low down in the cervix, and cases in which

* *See* Menge and Krönig, "Bacteriologie des weiblichen Genitalkanales."

there is reason to suspect sarcoma or carcinoma, in which the whole uterus ought without question to be removed. But some think the cervix should be removed in every case, on the ground that, if left, it is a useless organ which may become diseased. The chief reason for leaving the cervix and a little bit of the body of the uterus as well as the ovaries or an ovary is that, if this is done, the patient will continue to menstruate. A less good reason is that amputation of the body of the uterus is an easier operation than removal of the whole uterus. Therefore, for long after the introduction of the latter operation, its mortality was higher than that of amputation of the uterine

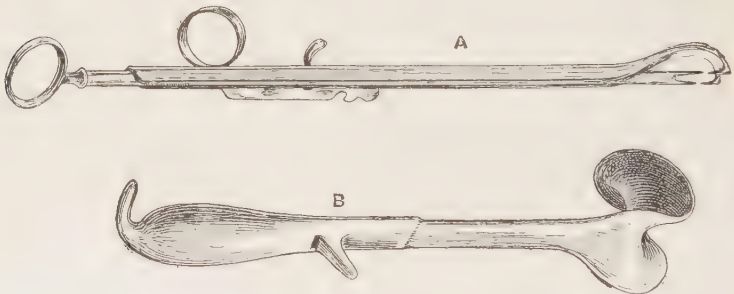


Fig. 257.—(A), Doyen's sliding hook clamp; (B), Doyen's retractor.

body. At the present time there is but little difference between the risks of the two operations. The mortality of either operation, taking all cases together, easy and difficult, is between 8 and 9 per cent.*

Methods of Operation.—"Pan-hysterectomy" has been and is performed in different ways by different operators. The result, in my judgment, depends upon the celerity and precision of the operator, rather than upon the method used. Any method, applied by skilful hands, gives good results.

The methods employed may be roughly classified as three. 1, From above; 2, from below; 3, the combined method. 1. The abdomen having been opened, and the intestines held away from the field of operation by a large sheet of sterilised Gamgee tissue, the uterus is pulled up. The broad and round ligaments are tied and divided as in amputation of the uterine

* Sänger and Herff, "Encycl. der Geb. und Gyn," 1900.

body. The operator then cuts through the vesico-uterine fold of peritoneum, and with the fingers or a blunt instrument carefully separates the bladder and ureters from the uterus. As in vaginal hysterectomy, so in this operation the precaution essential for the safety of the urinary organs is to

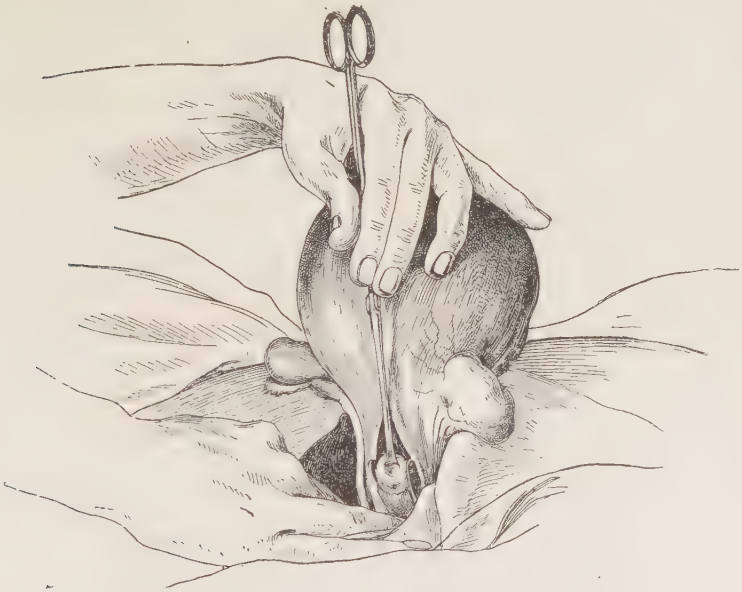


Fig. 258.—Hysterectomy by Doyen's method: separation of bladder begun.

carry this separation far enough on each side. Then the operator feels for the uterine artery on one side, puts a ligature round it with a blunt needle, and ties it. Some operators cut through it and then pick it up with forceps and tie it. Having secured the vessels and cut away the cervix from its attachment on one side down to and through the vaginal fornix, some operators go on to divide the vagina all round close to the cervix. The cervix thus being free, except on one side, the uterus can be turned over to that side, the incision round the vagina completed, and the uterine vessels tied and divided, or divided and then tied, and finally the uterus completely cut away. There are others who tie and divide the vessels on both sides before they extend the incision into the vagina and cut away the uterus. The uterus having

been removed, and hæmorrhage arrested, the next thing is to sew up the wound in the peritoneum, uniting the posterior to the anterior piece. This is best done by a continuous suture of fine catgut. Then the abdomen is closed, as after ovariotomy.

Fig. 259.—Hysterectomy by Doyen's method; cervix separated from bladder.

2. This method is that of Doyen. The advantage of it is, that by peeling the uterus from below upwards off the bladder and ureters, the risk of injury to these parts is reduced to a minimum. The operation is performed as follows :—

It is essential that the patient should be placed in the Trendelenburg or raised pelvis position. A long forceps is put in the vagina, with its end in the posterior cul-de-sac. The abdomen is opened, and the tumour brought outside in the manner already described. An assistant then pushes up as high as possible the forceps in the vagina. With this as a guide the operator opens with scissors the posterior vaginal fornix. This done, the posterior lip of the uterus is seized by a strong tenaculum with sliding catch, designed for the purpose by Dr. Doyen (Fig. 257, A). It is then pulled up (Fig. 258), and the operator, guiding his scissors with the left hand, cuts round the lateral attachments of the uterus. As the arteries spout they are clipped with pressure forceps. Then the anterior vaginal fornix is cut through, and the cervix uteri pulled up. As this is done, the loose cellular tissue between the bladder and uterus is torn through with the greatest ease (Fig. 259). The vesico-uterine peritoneum is then cut through. The remaining lateral attachments of the uterus are then cut through, either with or without preliminary ligature, according to the judgment of the operator. The operator's next business is to tie the bleeding points that have been secured with forceps, as well as any others that he may find bleeding. This is much facilitated by exposing the parts with Doyen's retractor (Fig. 257, B). When all bleeding points have been secured, the anterior and posterior flaps of peritoneum are sewn together in such a way as to close the peritoneum over the tubo-ovarian stumps on each side, the retro-vesical peritoneum being sewn to that of Douglas's pouch. The peritoneum is then made dry and clean, and the abdomen closed in the same way as after ovariotomy.

3. The combined method. This means that the patient is first placed in the lithotomy position. The cervix is pulled down by a volsella. The anterior vaginal fornix is opened, and the bladder and ureters stripped off the cervix, as in vaginal hysterectomy (care being taken to separate extensively at the sides), then Douglas's pouch is opened. The uterine arteries are secured, and the cervix freed from its lateral attachments, just as in vaginal hysterectomy. When this has been done, the patient is released

from the lithotomy position, and put in the raised pelvis position. The abdomen is then opened, the broad and round ligaments tied and divided, the incision in the peritoneum round the uterus made complete, and the uterus lifted out. Suturing is then done as in the operations previously described.

The advantage of this mode of operation is that the time during which the peritoneum is exposed to contact and chill is a little shortened. But when one of the two former operations is performed by a skilful person who wastes no time the difference is very little—not enough to make the change in position and longer anæsthesia worth while. An operator experienced in vaginal, but not in abdominal work, may however, feel that his patient is safer if he does the operation in this way. And there is one class of case in which it should be employed, those in which there is a foul discharge from the cervix. In such cases, to avoid contamination of the peritoneum by the discharge, the operation should be begun by putting the patient in the lithotomy position, and disinfecting and sewing up the cervix, and while the patient is thus necessarily in the lithotomy position it will be wise for the operator to do as much as he can before exposing the bowels to contact and chill, separating the bladder and ureters from the uterus in the same manner as in vaginal hysterectomy, before opening the abdomen.

CHAPTER LXII.

ECTOPIC AND COMPLICATED PREGNANCY.

Ectopic pregnancy attracts attention in different ways at different periods of its course. In its first three months it causes internal hæmorrhage, and is thus found out. I have described this event in Chapters XIX. and XX. Later it forms an abdominal tumour. In this chapter I consider the diagnosis of tumours so formed from those which resemble them, and their treatment. Extra-uterine pregnancy has to be diagnosed (1) when the child is living; (2) after it is dead.

When you have determined the fact of pregnancy with a living child by hearing the fœtal heart, vaginal examination is required to ascertain whether the pregnancy is intra- or extra-uterine, and in the former case whether there is any condition in the pelvis which may obstruct delivery. A living extra-uterine child may go to full term in one of two places: (*a*) below the pelvic peritoneum, (*b*) in the peritoneal cavity. The former is the commoner.

Diagnosis of intra-peritoneal pregnancy.—In some cases the ovum fertilised in the tube makes its way out of the tube, either by rupture or through the fimbriated end, and develops in the peritoneal cavity. It may lie in its membranes, or it may have kicked a hole through them, and lie free among the bowels, with fragments of membrane adhering to its skin. In this case the uterus may be displaced, either downwards and forwards, or downwards and backwards, or to either side. The child will be unusually movable, and its outline and movements will be felt with unusual ease. When the child is under the peritoneum, the tension of that membrane fixes the uterus; but when the child is free in the belly the uterus is not fixed unless the placenta is attached to it. The child does not descend into Douglas's pouch, for there is plenty of room for it above, and there is no force to drive it down.

Importance of uterine contractions and souffle.—Two signs which always are present in uterine pregnancy are absent in extra-uterine pregnancy: the rhythmical contractions of the uterus and the uterine souffle. A souffle of any kind is only exceptionally heard over an ectopic pregnancy, and then only over the uterus, not over the sac containing the fœtus. A souffle having rhythmical variations in loudness, such as those of the uterine souffle, is not heard. These signs would differentiate uterine from ectopic pregnancy were it not that they are sometimes difficult to make out. In a fat woman, or one very tender or restless, it may be difficult to feel uterine contractions, and in a noisy room to hear the uterine souffle. When the *absence* of a sign is the important matter, every possible difficulty in getting it must be remembered.

The diagnosis of extra-uterine pregnancy after death of the child.—A patient with extra-uterine pregnancy seldom goes to term without consulting a doctor. If the patient has been seen early in pregnancy by a competent man, the diagnosis will have been made. Even if the doctor has not recognised the condition, the patient has generally had a suspicion that she was pregnant. But now and then you may see a case after the death of the child in which it has never occurred either to doctor or patient that she was pregnant. In such a case the diagnosis may be difficult. The history is here important.

History of ectopic pregnancy.—Every case of ectopic pregnancy is in the beginning tubal, or (very rarely) ovarian. Before three months are past, the ovum has got too big to remain in the tube. Then either (1) the tube is perforated. It may be perforated (*a*) at a part of its wall that is covered by peritoneum. Then there will be great bleeding into the peritoneal cavity. The diagnosis and treatment of this event I have described in Chapter XIX. The fœtus may die, or it may go on developing in the peritoneal cavity. The tube may burst (*b*) at a part where it is not covered by peritoneum, but is in contact with the cellular tissue of the broad ligaments. The clinical history of this occurrence I have related in Chapter XX.

The fœtus in consequence of such rupture may escape into the cellular tissue. The rupture may lead to such damage to the chorionic vessels as to kill the fœtus; or the fœtus may go on to term, developing underneath the pelvic peritoneum. (2) The fœtus may die, hæmorrhages take place into its chorion, the clots become partly decolourised and organised, and thus the ovum come exactly to resemble the specimens found in every museum and labelled "carneous mole," but which have been expelled from the uterus. Hence an ovum similarly changed in the tube has been called a tubal mole. Such a mole has been found lying in the expanded outer part of a tube which showed no sign of rupture;* and hence it has been inferred that the ovum had been expelled from the tube by way of its abdominal end; an event which has been called "*tubal abortion.*" Some, however, doubt the fact of expulsion of a mole, thinking that the ovum had most probably originally developed at the place where it was found. It is very difficult to be sure that we interpret specimens and descriptions of specimens correctly, and I therefore express no opinion on this point. (3) The fœtus in its membranes may come to protrude more and more out of the open end of the Fallopian tube until the greater part of it, and finally practically the whole of it, comes to be in the peritoneal cavity. It may also, as has been pointed out, get into the peritoneal cavity by rupture of the tube. If the membranes get torn the fœtus may come to lie free among the bowels. The placenta as it grows may spread beyond the tube. It has been found implanted on the broad ligament, uterus, bladder, abdominal wall, large intestine, small intestine, mesentery, omentum, stomach. During ectopic pregnancy a decidua is formed in the uterus, and this is at some time expelled with pain and bleeding. The changes in the tube that I have mentioned, independently of rupture, also cause pain. The pain is severe and paroxysmal.

Hence it is rare for ectopic pregnancy to go to full term without enough symptoms to make the patient think that if she be pregnant, the pregnancy is not quite natural. Rupture of the tube is attended with well-marked symptoms

* See Muret, *Medical Chronicle*, September, 1893.

of internal hæmorrhage. We might expect that if development of the fœtus in the peritoneal cavity has taken place by gradual protrusion of the bag of membranes from the open end of the tube, it would reach term without any history like that of rupture. But I know not that this has been proved by comparing records of cases with their clinical histories.

If the pregnancy has reached its second half, fœtal movements will have been often felt by the patient; and if she has consulted a doctor, he will have heard the fœtal heart. The breasts will have enlarged.

Spurious labour.—When full term is reached, spurious labour follows. This consists in intermittent pains, like those of labour. Different speculations have been put forward as to the cause of these pains; but such evidence as I know of is in favour of their being due to uterine contraction. Mr. John Scott* operated while spurious labour was going on and saw the uterus contract. I have observed dilatation of the cervical canal while spurious labour was in progress, followed by contraction again when spurious labour was over. The pains recur over a time ranging from a few hours to two or three weeks. They are generally accompanied with hæmorrhage from the vagina. If the decidua has not been cast off earlier in the pregnancy, it is expelled during this spurious labour. Spurious labour is followed by a lochial discharge like that which follows natural delivery. It is also followed by activity of the breasts, like that which follows the birth of a child. The secretion of milk may only last a few days, but Caseaux (without giving his authority) mentions a case in which it lasted for thirty years. After spurious labour the child always dies, and then, as a rule, the liquor amnii is reabsorbed, and the belly gets smaller.

Characteristic features of the history.—In a tumour which you suppose may be a dead extra-uterine fœtus, you ought to have a history embracing the features detailed above. First, the subjective symptoms of pregnancy, with absence of menstruation for a month or two; then a sudden illness having the characters of internal hæmorrhage; after

* "Obst. Trans.," 1873, vol. xiv. p. 370.

this progressive enlargement of the belly, and the feeling of fœtal movements; then spurious labour, followed by cessation of fœtal movements and diminution in size. You will not in every case get a history so clear that you can identify each stage in the progress of the condition; but you will seldom meet with a case in which the clinical history does not suggest one or more of these events. If inquiry elicits that every feature of the clinical history outlined above has been absent, that fact is a strong argument against the case being one of ectopic pregnancy.

Diagnosis of subperitoneal pregnancy.—When the fœtus develops underneath the pelvic peritoneum it usually pushes the uterus forwards. The fœtal swelling fills Douglas's pouch, and the os uteri is high up behind the symphysis pubis. The other conditions which may produce physical signs somewhat resembling this are the following:—

(1) **Posterior obliquity of the uterus.**—This is not a happily chosen name. It means that the uterus, early in pregnancy, has been retroverted, that the posterior wall has remained in its displaced position, the anterior has enlarged to make room for the fœtus, and the cervix has remained high up in front (Fig. 260). I have published a case in which this state of things was produced by a fibroid in the posterior wall of the uterus.* The diagnosis between this condition and subperitoneal ectopic pregnancy is made by finding in the latter condition that the body of the uterus lies in front of the cavity which contains the fœtus. Ascertain this by bimanual palpation. You will feel, just underneath the abdominal wall, a solid lump longer and a little broader and thicker than the normal uterus. You cannot move it much because it is fixed by the peritoneum, but what little movement you can impart to it is communicated to the cervix which you feel by the vagina. If the case be one of posterior uterine obliquity you will feel no such body. If in doubt, anæsthetise the patient, seize the cervix with a volsella, pull it down, and try to pass the finger into it. If you cannot, dilate the cervical canal with Hegar's dilators until you can. If the case be one of posterior uterine obliquity, you will be able to pull down and easily

* *New York Journal of Gynecology and Obstetrics.*

dilate the cervix, and the finger when inserted will feel the bag of membranes. If the patient be not in labour this will probably start it. Therefore, unless there be reason for immediate decision as to the patient's state, postpone this manœuvre until she is so near term that the induction of labour will not be a misfortune. The history will help, but as decision must be based on physical examination, I

Fig. 260.—Diagram showing posterior obliquity of uterus. (*After Schaeffer.*)

postpone dwelling upon the history until I speak of cases in which it is important.

(2) **Intra-pelvic fibroid.**—Pregnancy with a fibroid in the posterior wall of the uterus, filling Douglas's pouch, may form a swelling, in some respects resembling that of an ectopic pregnancy. In this condition the tumour filling the pelvis will be felt to be made up of solid convexities. it does not give the feeling of a fluid swelling with hard knobs movable within it, such as may be felt if an extra-uterine fœtus is lying with the feet down, nor the uniform hardness of the fœtal head crossed by lines of suture, such as may be felt when an extra-uterine fœtus is lying with

the head down, separated from the finger only by the thin vaginal wall. A fibroid thus situated, combined with uterine pregnancy, is rare.

If pregnancy exist with a fibroid in the posterior uterine wall, filling Douglas's pouch, and therefore certain to obstruct delivery, the first question, after the diagnosis has been made, is, Can it be pushed up? If it can, this must be done; if it cannot, it will be difficult and dangerous to drag a mutilated child past it. The great vascularity of the parts will make it dangerous to attempt the removal of a big fibroid at the end of pregnancy. By Cæsarian section you can deliver the child alive. If done *early*, it will be less dangerous than either of the alternatives mentioned above. It is, therefore, the measure to be chosen if the fibroid cannot be pushed out of the true pelvis and is big enough to obstruct delivery. The time to do it is as soon as possible after labour has begun; and to ensure that everything shall be properly prepared, induce labour at a chosen time near full term.

(3) **Pregnancy with intra-pelvic ovarian cyst.** — An ovarian tumour in Douglas's pouch will give the elasticity of a fluid tumour without any feeling of solid knobs within it. In all probability you will be able bimanually to trace its convexity separate from the convexity of the uterus. As the occurrence of pregnancy usually implies that there were no adhesions in the pelvis, an ovarian tumour will probably be movable, so that you can push it up out of the pelvis. As to the treatment of this condition see p. 775.

Treatment.—In either of these conditions the treatment while the child lives, before labour has come on, is the same —viz. to let things alone until pregnancy has reached term. Shortly before full term the structures in the pelvis will become so relaxed that examination will be more easily made. If the condition be posterior obliquity of the uterus, the contractions and retraction of the uterus will pull up the posterior uterine wall, and the os uteri will come down into its natural position.

Treatment of extra-uterine pregnancy.—In this case there are two courses: (*a*) waiting till urgent symptoms arise; (*b*) removal of the living child by operation, as near full term as

possible. (*a*) If you wait, when full term is reached spurious labour will come on. Dangerous symptoms, either during the second half of extra-uterine pregnancy or during spurious labour are rare. After spurious labour the child will die, and then the liquor amnii will be reabsorbed. The woman may then carry the child in her belly for years without being the worse for it, except in being larger than she otherwise would be. This is a possibility, but not the usual course. More often, after the child has died, it remains quiescent for weeks or months, and then suppuration begins. Until then, as a rule, the mother's health does not suffer in any important way. (*b*) But by operating while the child is alive, a living child may be delivered. The mortality of operations for the delivery of living extra-uterine children is very high—between 60 and 90 per cent.* In some cases the placenta has been found so limited in its implantation on the broad ligament that it has been possible to pull it up, ligature the vessels supplying it, and cut it away. But in most it has not been possible to do this, and the operator, if he elected to remove the placenta, had to peel it off and trust to hæmostasis by pressure forceps, cautery, styptics, or plugging: and in pregnancy with a living child hæmorrhage has often proved uncontrollable. The prospect of a living child is not bright. Because the operation is performed while the child is alive, it does not follow that the child will be born alive; three-fifths of them are not. Extra-uterine children are more often deformed than intra-uterine. In between one-fourth and one-fifth of them there is deformity. Hence by operating while the child is alive you submit the mother to a terrible risk for a very uncertain gain.

The risk of an operation postponed till some time after the death of the child is small. After the child has been dead some time the placenta becomes thrombosed. The danger of hæmorrhage during operation is then comparatively trifling. Unfortunately we know not how soon thrombosis takes place. The safest course is to wait for the first symptoms of suppuration and then operate at once.

Pregnancy with a large ovarian cyst.—Only a large

* See Champneys, "Obst. Trans.," vol. xxix.; also Bland-Sutton in Allbutt and Eden's "System of Gynæcology."

cyst will cause difficulty in diagnosis. The belly will be big and fluctuating, but ballottement will not be got by the abdominal method. Vaginal examination will give the signs of pregnancy mentioned above, and, if there be much liquor amnii, ballottement. Palpation of the abdomen will reveal a sulcus separating the swelling within the belly into two parts. Such a sulcus generally runs diagonally (Fig. 261). On auscultation, the uterine souffle, with its rhythmical variations in loudness, will be heard over the one tumour not over the other.

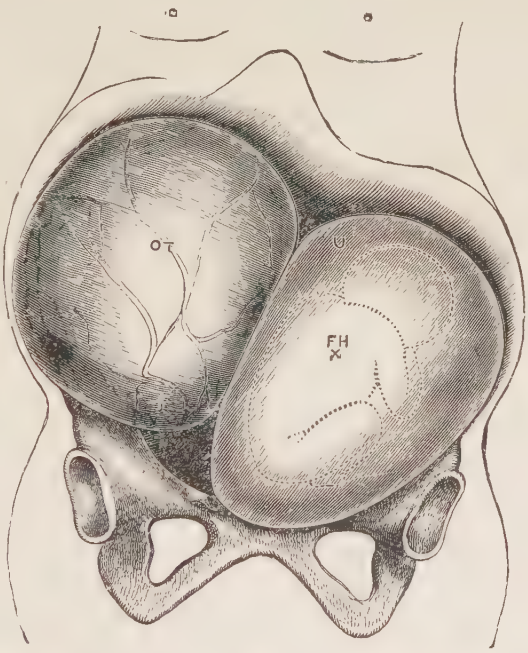


Fig. 261.—Pregnancy with ovarian tumour. (*After R. Barnes.*) O T, Ovarian tumour; U, uterus; F H, fœtal heart.

Hydramnios.—If liquor amnii be very abundant, the pregnant uterus will fluctuate freely, and it may be supposed to be an ovarian tumour. If the uterine wall be very tense, it cannot contract, and the intermittent contractions characteristic of a uterine tumour cannot be perceived. If the fœtus be living its heart can be heard, and there will be no difficulty. But it may be dead. In such a case ballottement is useful.

The cases in which there is the greatest difficulty in diagnosis are twin pregnancies, in which the amnion of one twin is dropsical. In these, the twin with the lesser quantity of amniotic fluid usually lies lower. Ballottement in such a case will be felt over the upper tumour, and over that only. If the uterus is greatly distended, you will not

be able to feel the rhythmical uterine contractions. You will hear the uterine souffle. I know of no observations as to whether, when the uterus is so large and tense that its contractions can neither be seen nor felt, the uterine souffle still undergoes rhythmical variations. A souffle undergoing rhythmical variation in loudness is not heard over an ovarian cyst. There may be a pressure murmur, but this is not constant. The main point is, that in hydramnios the swelling is one; there is no sulcus dividing it into two parts, and the larger it is the more closely it approaches the spherical in shape. When you examine by the vagina, you find the lower part of the uterus expanded, filling the brim, and either soft or filled by a fœtal part. If you can get your finger through the cervical canal and feel the membranes, the question is settled. If with a swelling, hard or soft, filling the brim, you can feel bimanually or with combined rectal and vaginal examination the body of the uterus, not enlarged, separate from the tumour, the question is settled. But you may find a swelling filling the brim, partly elastic and partly hard, and be uncertain whether the hard part is (*a*) the body of the unimpregnated uterus or (*b*) part of a fœtus. With such a doubt in your mind you cannot pass a sound or dilate the cervix. You must decide by other signs.

The softness of the cervix, and the blueness of it and of the vagina help. These changes may be present with a very large ovarian tumour that greatly obstructs the return of venous blood; but in the great majority of ovarian tumours they are not present.

In pregnancy there is usually amenorrhœa. This symptom is a hint to the doctor, not a factor in diagnosis; for a pregnant woman may have hæmorrhage and a woman with an ovarian tumour may have amenorrhœa.

The diagnosis between (*a*) pregnancy with excess of liquor amnii and a dead child and (*b*) an ovarian tumour is made from the presence, with pregnancy, of (1) blueness and softening of the cervix, (2) ballottement, and (3) a history of amenorrhœa; the absence of these features in a case of ovarian tumour. Although each of these singly may in exceptional cases be present with an ovarian tumour, yet the

chances are so much against their combination that you may take it as a theoretical, not an actual, possibility.

Pregnancy and ascites.—When the distension of the belly is very great, there may be ascites. Then there will be a uniform wave of fluid all over the belly, and the fingers, when sharply pressed down, will come upon a firm swelling below. If the vaginal signs of pregnancy are also present, it will not be possible to say what is within the ascitic belly until the fluid has been withdrawn. Therefore this must be done. If you thrust a trocar into the belly, you know not what you may wound. The right course is to make an incision with a scalpel about three-quarters of an inch long midway between the umbilicus and symphysis pubis. When you have cut through the skin, pick up the tissues beneath with a clawed forceps, and cut through them, holding the flat of the knife parallel with the abdominal wall. Having opened the peritoneum, let the fluid run away, and then examine the swellings which remain in the abdomen, putting the finger in the wound if necessary. If you should be mistaken, and the case be not one of ascites, you will at least do no harm by this cautious proceeding.

Diagnosis long after death of child.—An ectopic pregnancy, in which the child has been long dead and its liquor amnii absorbed, and no history can be obtained, cannot be distinguished from solid tumours of other kinds. If the fœtus has developed underneath the pelvic peritoneum, that membrane will hold it close to the uterus, so that it will form a retro-uterine solid tumour, apparently one with the uterus, and therefore indistinguishable from a fibroid. If it be free in the peritoneal cavity, and movable apart from the uterus, it will be indistinguishable from a solid tumour of the ovary. The correct diagnosis could in neither case be made without an exploratory incision; and if the patient's health be suffering, this will be the proper treatment.

The treatment of extra-uterine gestation after the death of the child.—It is possible for a patient to retain a dead ectopic child for years without her health suffering. The child may remain practically unchanged, or calcareous salts may be deposited in its membranes and its skin, so that it becomes enclosed in a more or less complete calcareous shell,

and becomes what is called a lithopædion (Fig. 262). In either case the patient may go for an indefinite time in good health, suffering only from the increased size of the belly. So long as she is in this state there is no need to

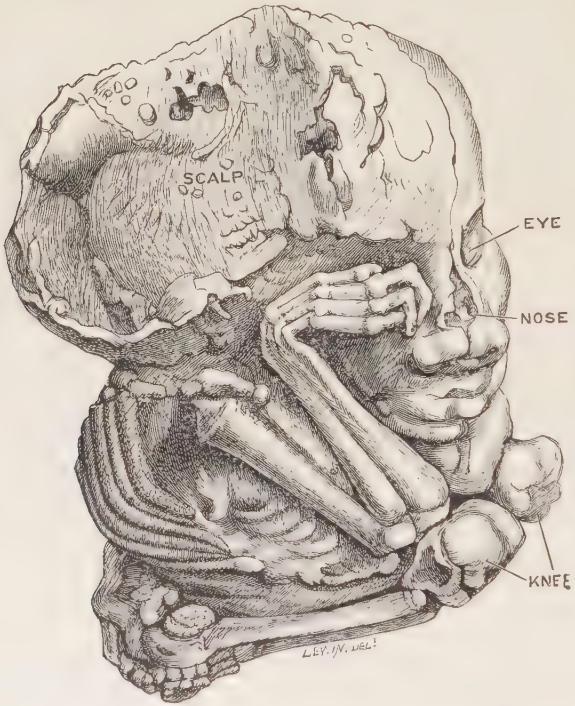


Fig. 262.—Lithopædion. (*After Bland Sutton, from a specimen in the Museum of the Royal College of Surgeons.*)

do anything. A moderate increase in the waist measurement is not a sufficient reason for an operation involving much immediate suffering, some risk to life, and possible ulterior ill-effects.

When operation is indicated.—Usually, at a variable time after the death of the child, suppuration begins. This is marked by fever, pain, and, if these symptoms continue, wasting. As soon as this process has begun it is time to interfere. Wait only long enough to be sure that the febrile symptoms are not due to some other cause. If you wait

longer than this, the continuance of suppuration will reduce the patient's strength, and no greater safety in the operation will be attained.

The operative removal of an extra-uterine fœtus at this stage is not usually a difficult operation, nor should it be a dangerous one. But there are several important points yet to be settled by clinical experience.

The operation for removal of a dead extra-uterine fœtus.—Open the belly in the same way as in ovariotomy. Make your incision at first small. When you have found out the state of things present, you can enlarge it as much as, and in whatever direction, you think best. If the child be in the peritoneal cavity, you will come upon it at once. If it be under the pelvic peritoneum, you will see what looks like a cyst, but is red and vascular, and has not the mother-of-pearl appearance of an ordinary ovarian cyst. On examining with the fingers the relations of the swelling exposed, you will feel it to be continuous with the peritoneum, covering the false pelvis. If it be free in the peritoneal cavity, judge from the size of the child how large an incision is needed for its delivery, and enlarge the wound in the abdominal wall to the required extent. Seize the child by the leg, and extract it. Cut through the umbilical cord.

So far the operation is simple. That upon which judgment is difficult is how to deal with the placenta. There are three courses:—(1) To remove it; (2) to leave it to be absorbed; (3) to leave it to be discharged.

(1) The general rule has been not to try to remove the placenta. The longer the time that has elapsed since the death of the child, the more likely it is that the placental vessels will be thrombosed, and that the placenta can be removed. If the placenta can be removed with the fœtus, the patient's recovery will be smooth. (*a*) Ascertain the size and condition of the placenta. If you feel it as a definite, firm, circumscribed lump, it is thrombosed, and may be removed. Peel it off with the fingers. You will be able to do this with only trifling hæmorrhage. If the placenta is not thrombosed, it will not feel firm, and detachment of part of it will be followed by formidable bleeding. If so, desist, and pack the part that bleeds and its neighbourhood with iodo-

form gauze. If that is not effective, apply perchloride of iron to the bleeding surface, to clot the blood. (*b*) If you find the placenta is thin, spread out over a large area, and without a distinctly felt edge you had better not try to detach it.

(2) If you decide not to attempt removal of the placenta, the question arises, Shall it be left to be absorbed? Braithwaite has reported a case in which the placenta never came away.* In a case published by Champneys,† he provided for the discharge of the placenta; but it was not discharged, and the wound could not be prevented from healing. The patient

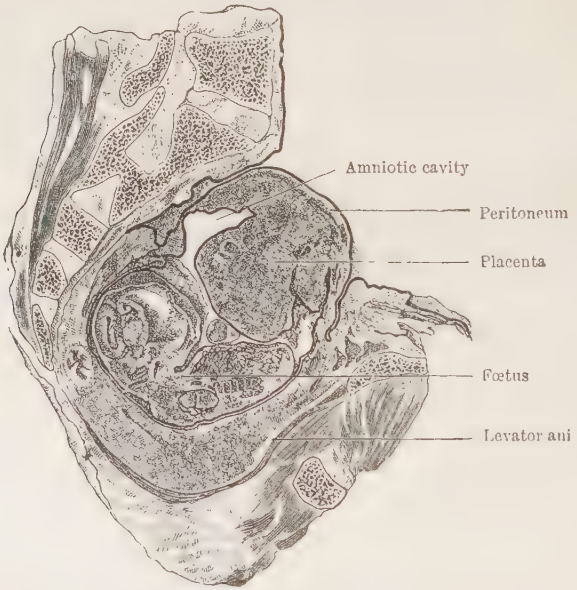


Fig. 263.—Sagittal section of pelvis in a case of four months' pregnancy in the broad ligament underneath the peritoneum. (*After Berry Hart.*)

died from septic intoxication eleven weeks and a half after the operation; and it was found on *post-mortem* examination that had the belly been reopened the placenta could easily have been removed. Cullingworth in one case left the placenta behind, and closed the wound, but the patient died. From this experience I think it not safe to expect absorption of the placenta.

* "Obst. Trans.," vol. xxviii.

† *Ibid.*, vol. xxix.

(3) If you decide not to attempt removal of the placenta, or if you attempt it and find bleeding follow, the right course is to provide for its subsequent discharge. Your rule should be, when in doubt, leave the placenta. Close the abdominal wound, except the lower two inches. Here put two

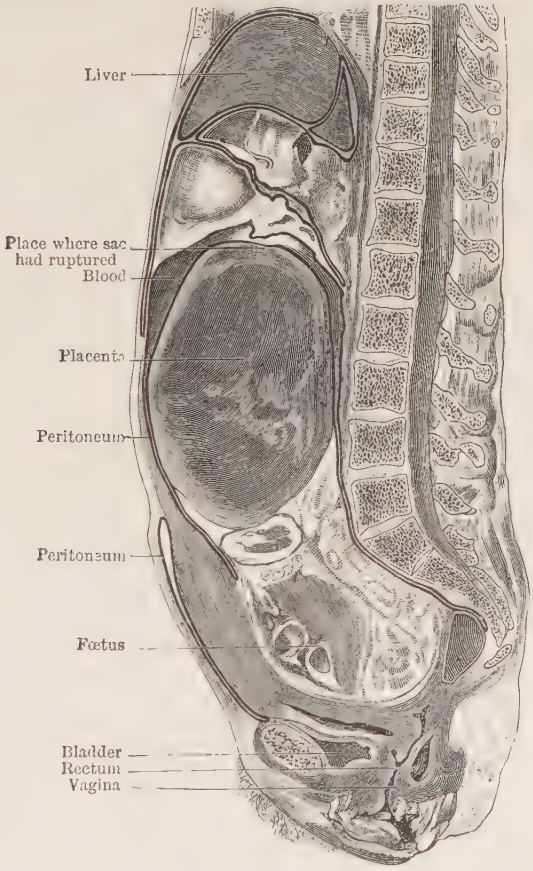


Fig. 264.—Sagittal section of case of pregnancy at term underneath peritoneum. (*After Berry Hart.*)

pieces, side by side, of large-sized indiarubber drainage tubing. Wash out the cavity twice daily, or oftener if the discharge be offensive, with a non-poisonous antiseptic douche, using plenty of it. If iodoform gauze has been used, bring out the end through the opening. Leave the gauze in for

a week; and after removing it, wash out the cavity as advised above. In most cases the placenta will come away, as shreddy, fibrous stuff, within a fortnight.

Vaginal operation.—If when the abdomen has been opened you have found that the fœtus is underneath the pelvic peritoneum, it will be better if possible to remove it through the vagina. Examine carefully by the vagina. If you can feel the fœtal head low down in the pelvis behind the uterus (Fig. 263), or if you can feel fœtal limbs in this situation, so that the long axis of the swelling is parallel with that of the uterus (Fig. 264), and the tissues which separate the fœtal parts from the vaginal finger are thin, the best operation is to incise the vagina, and thus extract the fœtus. The thinness of the tissues enables you to be sure that you will not cut through the placenta. Make a cut in the middle line, and then extract the fœtus, either by making a hole in the head with scissors, and then seizing the edge of the opening with forceps, or by grasping a foot, according to the part that presents. Make no attempt to remove the placenta. Wash out the cavity twice daily, or oftener, with a non-poisonous antiseptic until all the placenta has come away.

If the child is lying transversely; if there is any doubt about the diagnosis; if through the vagina you can only feel a solid lump, this is probably the placenta, and you had better open the gestation sac abdominally, extract the fœtus, and then if the placenta be thrombosed peel it off and remove it: if not pull it up, and transfix and tie with as many interlocking ligatures as may be necessary the broad ligament below it.

CHAPTER LXIII.

INGUINAL SWELLINGS.

I DO not describe here those inguinal swellings which occur in both sexes. There are certain inguinal swellings which are peculiar to women, and these are the subject of the present chapter.

Hydrocele of the canal of Nuck. — This condition is rare. Hennig* collected 41 cases. It is congenital. According to Zuckerkandl (quoted by Hennig), who examined 19 bodies of female infants of from 1 to 12 weeks' age, the canal of Nuck was open in four, in three of them on both sides. The chamber formed by this process of peritoneum may or may not communicate with the general peritoneal cavity. If, as in most cases, it does, the swelling will be reducible. There may be several small sacs along and in front of the round ligament. After labour, or in consequence of violence, these may inflame.

Such a sac contains serous fluid, but sometimes blood, a result of injury, the injury having drawn attention to the tumour. In many cases the cavity is multilocular. The tumour, if not too large, is covered in front by the fascia transversalis and the cremaster muscle, which, in the congenital hydrocele in the male, is not the case. Sometimes, but only exceptionally, a coil of intestine is found in the canal.

Symptoms and signs.—This condition, being congenital, exists from birth, but it may first attract notice at almost any age. It occurs on the right side as often as on the left: less often on both sides. The tumour is painless (unless inflamed), ovoid, its long axis running parallel with Poupart's ligament, and pointing towards the labium: soft, not tense; if it communicate with the peritoneum it disappears when the patient lies down. If the hydrocele be inflamed there may be fever, tension, tenderness; and it may become adherent to the skin.

* "Arch. für Gyn.," Band xxv., S. 103.

These tumours are often taken for hernia. Translucency, the well-known sign of hydrocele, is only to be obtained if the communication with the peritoneal cavity is closed. A hydrocele does not gurgle.

As a result of inflammation, gas may develop within the sac of such a hydrocele, and thus it may be resonant. As a rule a hydrocele is dull on percussion. It fluctuates, which will distinguish it from an omental hernia, or a hernia of the ovary.

It is said that symptoms of strangulated hernia, constipation, and vomiting, may result from inflammation of such a hydrocele. They may accompany it, but it is difficult to understand the relation of cause and effect.

Treatment.—The treatment consists, if there be a communication with the peritoneal cavity, in the application of a truss. If it do not communicate, then the best treatment is a free incision, and excision of so much of the wall as seems superfluous.

Hernia of the ovary.—An inguinal swelling in a woman may be a hernia of the ovary. Langton* found that about one inguinal hernia in every sixty contained an ovary. Such herniæ are usually congenital. Langton states that of inguinal herniæ in general, about one in seven is congenital, while of those containing ovaries two-thirds are congenital. When congenital, the condition is nearly always bilateral. Of ovarian herniæ on the right side about five per cent. are irreducible; of those on the left side about twice as many—a difference hard to explain, but not an accidental one, for the same difference exists between the two sides in the allied condition of the testis.

The presence of an ovary in any other hernia than an inguinal one is very rare. Langton has only seen one in a femoral hernia, and that was doubtful. Cases have been related by old writers of ovaries in the femoral canal, in the great sciatic notch, in hernia through the umbilicus, and through the obturator foramen. It is also said to have descended through an opening in the deep pelvic fascia, and so protruded into the vagina, and even at the vulva: a condition known as ovaricocele vaginalis. These things are very

* *Lancet*, 1882, vol. i. p. 143.

rare, and as some of the observations were made very long ago, it is possible that there may be error.

Symptoms.—Hernial ovaries often give no trouble. In congenital herniæ symptoms may begin at puberty. There may be pain, radiating from the hernia, increased by lying on the opposite side, increased also by bimanually pressing the uterus away from the hernia, so that the ovarian ligament is dragged on. In some cases the ovary has been observed to swell and become more painful and more tender during menstruation; but in others there has been no change. In the latter case, it is probable that the hernial ovary, like an undescended testis, is imperfectly developed. If an inguinal swelling is stated to become larger during menstruation, this does not prove it to be an ovary, for this statement has been made by women whose herniæ only contained bowel. When ovarian hernia is bilateral, sterility is the rule; but not all patients with ovarian hernia are sterile.

A hernial ovary may become incarcerated, like a hernia of bowel. It may become the subject of cystic disease or of cancer.

The hernial sac may contain the ovary and nothing else, or it may contain also bowel or omentum, or both. The ovary may be adherent to bowel or omentum; in which case, if the hernia be an acquired one, it is reasonable to think that the adhesion has pulled the ovary down into the hernia. Generally the uterus is pulled into an oblique position in the pelvis, and in rare cases one corner of the uterus has been contained in the hernia.

Diagnosis.—An ovarian hernia differs from one containing bowel in being more solid and firm, and not gurgling. It differs from an enlargement of inguinal glands in having a neck passing up the inguinal canal; by passive movement of the uterus it may be possible to demonstrate that this neck is connected with the uterus. I know not how to distinguish between an ovary in a hernial sac and a piece of omentum of about the same size and shape, unless the ovary should plainly swell and become tender with each menstruation. Cases have been recorded* in which an inguinal swelling, thought to be an ovary, turned out, on

* *See* Chambers, "Obst. Trans.," vol. xxi.

microscopical examination, to be a testicle. When an inguinal lump is associated with malformation or imperfect development of the external genitals, it is not possible, without microscopical examination, to say whether it is an ovary or a testicle. As the testicles normally pass through the inguinal canal, and the ovaries do not, an inguinal lump of doubtful nature is more likely to be a testicle than an ovary.

Treatment.—If an ovary accompanies a hernia of bowel into the inguinal canal, the treatment is the same as that for a hernia which does not contain an ovary. Either keep the hernia back by a truss, or advise the patient to have the inguinal canal closed by operation. As to the indications for, and the methods of performing, the operation for the radical cure of hernia, consult works on surgery.

If the inguinal tumour is congenital and is painful, and its nature uncertain, carefully cut through its coverings and ascertain its nature. If it be an ovary or testicle which cannot be replaced, remove it. The safest way to do this would be by pulling it down, transfixing and tying its pedicle. But I should think (though I have never done or seen done this operation, and therefore speak not from experience) that the ovary, or testicle, might safely be removed by avulsion. In either case it is likely that the organ is imperfectly developed, so that its removal will do no injury to the patient.

If the hernia is irreducible, and the patient is unwilling to submit to any surgical operation, the ovary can be protected by a truss with a hollow pad.

Hernia of the Fallopian tube.—The Fallopian tube may be in a hernial sac along with the ovary (Fig. 265); but I know not how, before the sac is opened, you are to find out that it is. Very rarely the Fallopian tube without the ovary is contained in a hernial sac. Thelwall Thomas* has well described such a case. A lump in the groin suddenly formed, and became painful and tender. It was supposed to be a strangulated omental hernia, and an operation was done. It proved to be a Fallopian tube, much swollen and purple in colour. It was reduced by incising Gimbernat's ligament, in the same way as for a strangulated hernia of bowel.

* *Brit. Med. Journal*, October 24th, 1896.

A few other cases, most of them in old literature, are recorded. I know not how you are to ascertain the nature of such a swelling. The possibility of a hernia containing a tube confirms the advice given about other rare inguinal tumours—viz., in case of doubt, cut carefully through the coverings of the swelling, so that you may see what you have to deal with.

Widerstein * has related a case in which pregnancy took place in a tube lying in the sac of a femoral hernia. This is the only recorded case of the kind, and Olshausen thinks it not enough to establish the fact. Max Jordan † has recorded a case in which a tubal pregnancy burst into the sac of an inguinal hernia.

Fig. 265.—Hernia of Fallopian tube. (*After Bland-Sutton.*)

The cases recorded in old literature seem to show that operations on hernial ovaries and tubes are attended with a very high mortality. But these cases were treated before the introduction of antiseptics, and therefore they have no bearing upon the practice of the present day.

Tumours of the round ligament.—These may be situated in one of two places:—(1) Within the belly; (2) outside the belly wall. It is a theoretical possibility that there might be a tumour of the round ligament in the inguinal canal, but no such tumour in this situation has yet been observed. Most such tumours are outside the external ring, and therefore I describe them under the heading of inguinal tumours. ‡

The tumours that have been seen in the round ligament are either fibroids or fibroid mixed with other tissue. Thus

* Quoted by Olshausen. I have not seen the original.

† *Münch. Med. Woch.*, January 5th, 1897.

‡ The best account has been given by Sänger ("Arch. für Gyn.," Band xxi.).

Cullen* has described adeno-fibroma—that is, a tumour of fibrous tissue traversed by glands: others have seen myxo-fibroma, fibro-myoma, fibro-myo-sarcoma (Sänger), myoma lymphangiectodes (Leopold), fibroid with calcareous degeneration.

The number of such tumours reported is too small to allow general statements to be confidently made. But the few (Sänger refers to eleven) that are recorded show that these tumours, like inguinal hernia, are more common on the right side than the left. There is no age at which they are specially prone to occur. They grow slowly, and according to Leopold,† they increase in size during pregnancy and retrograde after delivery. While small, their usual seat is over the inner third of Poupart's ligament; but they may extend down into the labium, upwards and outwards into the inguinal canal, and even into the iliac fossa, or into the true pelvis. It has been suggested that the tumours of the abdominal wall described in Chapter LX., may have originated in the round ligament, but I see no reason for thinking so.

They cause no symptoms except sometimes pain. They are said to swell and become tender before menstruation, but not so much as a hernial ovary. In the latter condition the inguinal swelling will date from childhood; a round ligament tumour will have been only recently perceived; and with a hernial ovary the uterus leans towards the inguinal swelling: not so with a round ligament tumour. Fibroids of the round ligament form firm rounded or ovoid solid lumps; not reducible or giving an impulse on coughing, like a hernia; not fluctuating, like a hydrocele; not acutely tender, like an inflamed gland. As they enlarge their mobility increases.

In case of doubt as to the nature of an inguinal swelling which is giving trouble, the proper course is to make an incision over it, and thus ascertain its nature. The only way to treat a fibroid of the round ligament is to remove it. Cases are so rare, and differ so much from one another, that it is not possible to describe an operation appropriate to all such

* Bulletin of Johns Hopkins Hospital, 1896.

† Quoted by Sänger op. cit.

cases. The operator must apply the rules of surgery to the special features of each case. One thing requires mention —viz., that in removing such tumours the epigastric artery is liable to be wounded, and, therefore, hæmorrhage to be free. One who undertakes the operation must be prepared to deal with this.

Tumours of the round ligament within the abdomen.— These are less common than those occurring in the groin. I have seen one case along with my colleague, Mr. McCarthy, in which we were as sure as we could be without exploration that an abdominal tumour was of this nature: it was a solid lump tethered at one end to the uterus, and at the other to the inguinal ring. As it caused no trouble, we advised against any operation, and therefore the diagnosis remained unverified. Martin * has described two cases of tumours containing altered blood, the seat of which he thought was the round ligament. Some think that the round ligament is at one stage in its history a canal; and if so, the persistence of this canal affords an explanation of the formation of such a blood cyst in the ligament. In neither of Martin's cases was the nature of the tumour found out before operation; nor know I how such tumours can be identified.

* "Zeit. für Geb. und Gyn.," Band xxii.

INDEX.

A

Abdomen, Chronic pain of, 53
Abdominal examination, 61
— - section for hæmatocele, 316
—— —— for internal bleeding, 305
—— shock, 188
—— signs of pregnancy, 580
—— tumours, 731
—— ——, Solid, 833
—— wall, Fibroids of, 844
Abel and Landau on changes in uterus with cancer, 373
Abortion, Tubal, 294, 308, 861
Abortions, Early, and membranous dysmenorrhœa, 536, 539
Abscess of Bartholin's duct, 513
—— —— —— gland, 513
—— of labium, 517
——, Parametric, 271
——, Pelvic, causing retention, 693
——, Perimetric, 267
—— of urethro-vaginal septum, 673
—— of vulva, 517
Abscesses, Stitchhole, 818
Absence of ovaries, 615
—— of sexual feeling, 636
—— of uterus, 616
Absolute sterility, 641
Absorption of fibroids, 423
—— of peritoneal adhesions, 147
—— of pus, 267
Abuses, Sexual, 638
Aching kidney, 55
—— of muscular and fibrous tissues, 53
Actinomycosis of Fallopian tubes, 222
Acute gangrene of vulva, 504
Adeno-carcinoma, 363
—— of ovary, 748
Adenoma and endometritis, 470
—— of Fallopian tube, 257
——, Malignant, 355, 362, 406
——, polypoid of cervix, 466
—— of uterine body, 354
Adenomata, Multilocular ovarian, 741
Adenomatous growths in parovarian tumours, 740
Adherent retroflexion, 170
Adhesions after operations, 825
——, Bleeding from torn, 823
—— causing pain, 196
——, Formation of, with ovarian tumours, 772
——, How to deal with, 807
——, Pelvic, 234
——, peritoneal, Absorption of, 147
—— of polypus, 336
Adhesive perimetritis, 197
Age in diagnosis of cancer, 375
—— and sterility, 642
Aitken's porcelain stem, 136
Albuminuria in parametritis, 282
Alcohol in chronic metritis, 104
—— and endometritis, 473
——, Ovarian pain from, 84
—— in perimetritis, 200
—— and sterility, 648
Alexander's operation for prolapse, 144
—— —— for retroflexion, 166
Allbutt, Dr. Clifford, on neurotic patients, 27
Allingham on hæmorrhoids, 718
Alveolar cancer, 407
Amenorrhœa, 569
—— with cancer of ovary, 760
—— in diagnosis of pregnancy, 587
Ammonium-chloride in dysmenorrhœa, 542
Amputation of cervix for cancer, 384
—— —— —— for hypertrophy, 464
—— —— ——, stenosis following, 534
—— of vaginal cervix, 174
Anæmia causing amenorrhœa, 569
Anæmic headache, 39
Anæsthesia, 7
——, Examination under, 68
Aneurysm, Abdominal, 49, 292
Angina pectoris, simulated by neurasthenia, 17
Angioma of urethra, 665
Annular sloughing of genital canal, 699
—— stricture of rectum, 720
Anorexia nervosa, 574
Anteflexion, 107
—— and endometritis, 471
—— and "Protean" symptoms, 11
Anterior colporrhaphy, 138
—— colpotomy for salpingo-oöphoritis, 254
—— parametritis, 283
Anteversion, 107
Antipyrin in membranous dysmenorrhœa, 543
—— in spasmodic dysmenorrhœa, 552
Antiseptics, 7
Anti-streptococcic serum, use of, 827
Anus, Protrusion of ovarian tumour through, 774
——, Pruritus of, 721
Aorta, Pulsating, 17
Apostoli's treatment, 432
Appendix, The, and salpingo-oöphoritis, 259
Ardor volaticus, 593
Areola, Secondary, 579
Areolar hyperplasia of cervix, 463
—— ——, Chronic, 96
Arsenic in dysmenorrhœa, 543
—— in neurasthenia, 27
Arteries, Uterine, after childbearing, 91
Arterio-sclerosis of the uterus, 327
Artificial insemination, 647
Ascites, Diagnosis of, 779
—— from papilloma of Fallopian tube, 257
——, Pregnancy with, 869
—— with cancer of ovary, 760
—— with ovarian fibroid, 756
—— with sarcoma of ovary, 758
—— with a tumour, 786
Asthenopia, 16
Atlee, Dr., on urethral caruncle, 664

Atonic dyspepsia, Pain in, 55
Atresia of uterus, 612
—— of vagina, 605
Atrophic endometritis, 325
—— parametritis, 286
Atrophy, Puerperal, of uterus, 92
—— of subserous fibroids, 237
—— of uterus, 591
Aural headache, 42
Auscultation of abdomen, 581
Aveling's repositor, 332
Avulsion of fibroids, 428

B

Back, Pain in, 44
Baker, on fissure of neck of bladder, 679
—— on kinking of urethra, 659
—— on tender red patches in urethra, 677
Baldry on prolapse of uterus, 121
Ball on stricture of rectum, 720
Ballantyne on hermaphroditism, 625
Ballottement, 585
"Banal" causes of endometritis, 470
Barnes, Robert, on copræmia, 372
——, ——, on dyschezia, 714
——, ——, on great bleeding in young girls, 325
——, ——, on hypertrophic polypi, 381, 464
——, ——, on incision of cervix, 553
——, ——, on occupation for women, 561
——, ——, on ovarian inflammation, 75
——, ——, on rupture of gravid uterus, 304
Barnes's "crescent" speculum, 63
Bartholin's duct, Abscess of, 513
—— gland, 508
—— ——, Abscess of, 503
—— ——, Cysts of, 511
—— ——, Hypersecretion of, 509
—— ——, Induration of, 510
—— ——, Inflammation of, 510
Bennet, Dr. Henry, and the speculum, 455
Bernutz and Goupil on metrorrhagic hæmatocele, 310
—— —— —— on rupture of ovary, 302
—— —— —— on rupture of varicose veins, 298
Beuttner on ulcers of vagina, 398
Beyca on prolapsed uterus, 123
Bicorned uterus, 620
Biliary colic, 57
Bimanual examination, 61
—— rectal examination, 68
Binder, Application of, 817
Birch on menstruation in tropics, 523
Bishop, Stanmore, on vesico-vaginal fistula, 712
Bivalve speculum, 63
Blacker and Lawrence on hermaphroditism, 625
Bladder, Abscess bursting into, 281
——, Drainage of, 682
——, Escape of ligatures into, 822
——, Exploration of, 684
——, Extroversion of, 702, 713
——, Fissure of neck of, 679
——, Foreign bodies in, 687
——, Injury of, in amputation of cervix, 391
——, Inversion of, 670
——, Irritation of, 653
——, New growths of, 687
——, Over-distension of, 655, 689
——, Reflex irritation of, 657
——, Rupture of, 691
Bladder, Smallness of, 654
—— in uterine cancer, 371
——, Wound of, in opening abdomen 806
Blanc, Dr., on ergot in childbed, 96
Bland-Sutton, J., on cervical fibroids, 339
——, ——, on dermoids, 750, 751, 752
——, ——, on erosions, 382
——, ——, on glandular structure of tubes, 229, 257
——, ——, on hernia of Fallopian tube, 879
——, ——, on hydrosalpinx, 232
——, ——, on multilocular glandular cysts, 744
——, ——, on omental hydrocele, 233, 795
——, ——, on ovarian myoma, 757
——, ——, on parovarian tumours, 739
——, ——, on sarcoma of ovary, 757, 758
Bleeding fibroids, 416, 419
—— vaginitis, 474
Blood cysts of ovary, 300
—— diseases, Hæmatocele from, 311
—— supply of uterus, 151
Bloodletting in chronic metritis, 102
——, Local, 563
Body of uterus, Cancer of, 375
—— —— ——, Discharge from, 468
—— —— ——, Normal secretions of, 434
Bond, Mr. C. J., on hæmatosalpinx, 232
Bones, pelvic, Destruction of by hydatids, 796
Bougies, Dilatation of cervix with, 553
Boulton on diabetic eczema, 486
Bowel infection, Salpingo-oöphoritis from, 221
—— pain, 56
—— Tearing of, in Tait's operation, 251
——, Ulceration of, and internal hæmorrhage, 292
Bowels, Obstruction of, in peritonitis, 191
Braithwaite on absorption of ectopic placenta, 872
Braun on vaginitis with gas-cysts, 451
Breaking down of fibroids, 838
Breisky on kraurosis vulvæ, 632
Bright's disease causing frequent micturition, 660
Broad ligament, Cellular tissue in, 262
—— —— cyst and salpingo-oöphoritis, Diagnosis between, 238
—— —— cysts, 738
—— ligaments, Varicose veins of, 298
Brodie, Gordon, on erosions, 382
Bryant on prolapse of urethral mucous membrane, 670
Bursal theory of vaginal cysts, 177
Buttock, Abscess pointing in, 281
Buzzard, Dr., 35

C

Cachexia from perimetritis, 196
Calcification of fibroids, 837
Calculus, Renal pain of, 54
—— ——, Tubal, 241
Campbell, Harry, on headache, 43
Canal of Nuck, Hydrocele of, 875
Cancer, Alveolar, 407
—— of bladder, 687
—— causing salpingo-oöphoritis, 218
—— of cervix, 360, 366
—— of clitoris, 502

Cancer and endometritis, 470
—— of Fallopian tube, 239
—— of labium, 499
——, Obstructive dysmenorrhœa from, 534
—— of ovary, 759
—— and parametritis, 266
——, Parametritis from, 285
—— and recto-vaginal fistula, 722
—— of rectum, 719
——, Removal of ovaries for, 592
—— of stomach, Pain from, 56
——, symptoms of, 370
—— of urethra causing retention, 694
—— of urethro-vaginal septum, 671
—— of uterine body, 400
—— of uterus, Diagnosis from fibroid, 840
——, Vesical fistula from, 702
Cannabis indica in hæmorrhage, 328
—— in headache, 40
Carcinoma, columnar celled, 363
——, squamous celled, 362
Carcinomatous papilloma of ovary, 748
Caries of coccyx, 52
——, Spinal, 50
Caruncle, Urethral, 664
Caseaux on lactation after spurious labour, 862
Cast, Fibrinous, of uterus, 539
Catarrh and amenorrhœa, 591
Catarrhal endometritis, 469
—— salpingitis, 227
Cathartics in chlorosis, 572
Catheter, Ureteral, 686
——, Use of, 67
Cauliflower excrescence, 361, 365
Cellular tissue, Spread of cancer into, 371
Cellulitis, 260, 264
——, Stricture of rectum from, 716, 720
Celluloid specula, 63
Central rupture of perineum, 724
Cerebral tumour, Headache of, 39
Cervical lacerations, 454
Cervix, Adenoma of, 466
——, Amputation of, for hypertrophy, 174
——, —— for prolapse, 148
——, Cancer of, 360, 366, 385
——, Chancre on, 492
——, Dilatation of, 343
——, ——, in membranous dysmenorrhœa, 543
——, Discharge from, 453
——, Disease of, and sterility, 650
——, Elongation of, 121
——, —— of infra-vaginal portion, 127
——, Erosion of, 455
——, ——, with retroflexion, 155
——, Fibroids of, 339
——, Incision of, for dysmenorrhœa, 552
——, Inflammation of, 443
——, Infra-vaginal hypertrophy of, 172
——, —— ——, operation for, 174
——, Injury to, causing parametritis, 265
——, Lacerations of, 453
——, Operations on for chronic metritis, 105
——, Sarcoma of, 339, 398
——, Secretion of, 434
——, Sloughing of, 699
——, Softening of, in pregnancy, 566
——, Supra-vaginal amputation of, 384
Chambers on ovarian hernia, 877
Champneys, Dr., on cervico-vesical fistula, 711
Champneys, Dr., on dysmenorrhœa, 536, 553
——, ——, and ectopic placenta, 872
——, ——, on extroversion of bladder, 702
——, ——, on pain of cancer, 371
——, ——, on uterine retraction after menstruation, 527
——, ——, on uterine souffle, 582
Chancre, 380, 491
——, Diagnosis from cancer, 380
—— and follicular vulvitis, 490
——, Stricture of urethra from, 660
Change in neurasthenia, 28
—— of residence and amenorrhœa, 590
Channelled polypus, 466
Childbearing and cancer, 360
—— and cancer of uterine body, 400
Childbirth after vaginal fixation, 164
——, Injury in, causing prolapse, 108
——, Ovarian pain following, 78
—— and salpingo-oöphoritis, 217
Children, Leucorrhœa in, 436
——, Salpingitis in, 438
Chill and amenorrhœa, 591
—— at menopause, 593
——, Salpingitis from, 221
Chloral in dysmenorrhœa, 543
Chlorosis, 570
Cholesterine in ovarian tumours, 743
Chondro-carcinoma, 363
Chorion, Retained, 348
Chorion-epithelioma, 350
Chorionic villi, 541
Chronic abdominal pain, 53
—— areolar hyperplasia, 96
—— metritis, 20, 96
—— ovarian pain, 69
Cicatricial stricture of urethra, 660
Cirrhosis of liver and internal hæmorrhage, 292
—— of ovary, 76, 77
Civilisation, Effect of, on the menopause, 591
Clark, Sir Andrew, on chlorosis, 572
——, ——, on the menopause, 591
Clarke, Sir C. M., on cauliflower excrescence, 365
——, ——, on chronic congestion of urethra, 672
——, ——, on corroding ulcer, 396
Classification of cancer, 364
Climacteric, 591
—— dyspareunia, 633
—— hæmorrhage, 325
Climate and menstruation, 323, 523
Clitoridean crises, 638
Clitoris, Cancer of, 502
——, Enchondroma of, 521
——, Hypertrophy of, 520
Clot, Menstrual, 539
Clover's crutch, 139
Coagulum in serous perimetritis, 205
Coccygodynia, 50
Coccyx, Caries of, 52
——, Dislocation of, 52
——, Fracture of, 52
——, Periostitis of, 52
Colic, Biliary, 57
——, Intestinal, 56
——, Renal, 54
Colloid cancer of ovary, 759
—— contents of ovarian cysts, 743
Colpocleisis, 710
Colporrhaphy, 138
——, Effect of, in prolapse, 143
Colpotomy, Anterior, for salpingo-oöphoritis, 254
Columnar celled carcinoma, 363
Concentric atrophy of uterus, 599

Condylomata, 380, 494
Confidence, Abuse of patient's, 35
Congestion, Passive, 322
——, Pelvic, with leucorrhœa, 441
—— of urethra, 672
—— of uterus with retroflexion, 151
——, Venous, Pruritus from, 482
Congestive dysmenorrhœa, 559
—— headache, 41
"Conical cervix" and sterility, 651
Conservative treatment of salpingo-oöphoritis, 252
Constipation, 714
——, Backache from, 48
—— and endometritis, 471
Contraction, uterine, Pain of, 54
—— of the vagina and operation for fistula, 707
Contractions, Rhythmical uterine, 583
— —, Uterine, during menstruation, 526
Copræmia, 372
Corpus luteum, The, 529
—— ——, Cysts of, 734
—— ——, Fibroid of, 756
Corroding ulcer of uterus, 396
Counter-irritation in chronic metritis, 102
—— — — in perimetritis, 200
Cradle pessary, 120
Credé on uterus arcuatus, 620
"Crescent," Barnes's speculum, 63
Cripps on stricture of rectum, 720
Croom, Halliday, on pelvic adhesions, 234
Crushing of tissues in labour, 697
Cullen on tumour of round ligament, 880
Cullingworth, Dr., and ectopic placenta, 872
——, ——, on hydrosalpinx, 231
——, ——, on ovarian abscess, 226
——, ——, on pelvic hæmatocele, 311
——, ——, on pelvic suppuration, 236, 237
——, ——, on temperature with pelvic suppuration, 236
——, ——, on ulceration of tube, 231
Cup and stem pessary, 136
Cure of cancer by operation, 393
Curette, 358
—— in membranous dysmenorrhœa, 544
Curetting for bleeding fibroids, 432
Cutter's pessary, 137
Cyst-regions of ovary, 732
Cystic glands in cervix, 464
—— polypus, 466
—— salpingo-oöphoritis, 229
Cystitis, 683
—— after abdominal section, 831
—— and atrophic parametritis, 286
—— with fistulæ, 701
Cystocele, 118
——, Treatment of, 120
Cysto-sarcoma of ovary, 758
Cystotomy, Vaginal, 682
Cysts of Bartholin's gland, 511
——, Broad ligament, 738
——, —— ——, and salpingo-oöphoritis, Diagnosis between, 238
— —, Hydatid, 796
——, Lutein, 734
—— of mesentery, 794
——, Multilocular ovarian, 741
—— of omentum, 795
——, ovarian, Rupture of, 301, 768
——, ——, Suppuration of, 226, 763
—— of pancreas, 794
— —, Papillary ovarian, 746
——, Parovarian, 738
——, Sessile thin-walled colloid, 744
——, Simple ovarian, 733
Cysts of spleen, 795
——, Tubo-ovarian, 734
——, urethral, Suppuration of, 674
——, Vaginal, 175

D

Daggett's table, 64
Dakin on discharge of decidua from uterus, 297
Death, Modes of, from cancer, 373
Decidua basalis, 294
—— capsularis, 294
——, Discharge of, in tubal pregnancy, 297
—— of extra-uterine pregnancy, 541
Decidual cells, 541
Deciduoma malignum, 350
Defæcation, Painful, 714
Delayed pointing of parametric abscess, 278
Dental headache, 42
Depletion in chronic metritis, 102
——, Local, 562
Dermatitis, Diabetic, 480
—— of vulva, 485
Dermoid cysts of urethra, 674
Dermoids, 749
——, ovarian, Suppuration of, 226
——, Suppuration of, 212
Descent of bladder, Irritation from, 657
—— of pelvic floor, Physiological, 113
Detachment of subserous fibroids, 634
Development, Imperfect, of tubes, favouring salpingitis, 222
——, Imperfect uterine, with ovarian pain, 82
—— of uterus, 616
Developmental causes of steriliity, 643
—— defects of ovaries, 615
Deville on granular vaginitis, 449
Diabetes and frequent micturition, 655
— and pruritus, 479
Diagnosis, Early, of cancer, 374
Diarrhœa in peritonitis, 187
Dickinson on digitalis, 328
Diffuse adenoma, 355
—— septic peritonitis, 192
Digitalis in climacteric hæmorrhage, 328
Dilatation, when called for, 321
—— of cervix, 343
—— —— for dysmenorrhœa, 554
—— — in membranous dysmenorrhœa, 543
—— —— and sterility, 645
—— of sphincter ani, 717
—— of urethra, 681
—— of uterus, Spontaneous, 324
—— of vagina, 628
Dilators of cervix, 555
Dirt and pruritus, 479
Discharge, Pruritus from, 480
— from rectum, 720
Disintegration of fibroids, 424
Dislocation of urethra, 658
Dislocations of coccyx, 52
Displacements and sterility, 649
— —, Uterine, 107
Diverticula, Urethral, 674
Division of sphincter ani, 717
Doctor, Family, and gynæcology, 5
Dodging time, 592
Doran on absorption of fibroids, 424
—— on broad ligament cysts, 738
—— on cancer of Fallopian tube, 239
—— on closure of tubes, 230

Doran on dermoids, 752
—— on enlarged hydatid of Morgagni, 241
—— on inflammatory enlargement of ovary, 756
—— on interstitial salpingitis, 228
—— on pancreatic cysts, 794
—— on papilloma of Fallopian tube, 257
—— on tubo-ovarian cysts, 735
Douche in chronic metritis, 103
——, Hot, in perimetritis, 200
Douches in puerperium, 216
Down, Dr. Langdon, on excessive sexual irritability, 637
Doyen's method of hysterectomy, 854
Drainage of bladder, 682
—— in cystitis, 688
—— of peritoneum, 815, 819
Dreams, Erotic, 637
Dress of girls, 46
Duchastelet on hyperæsthesia of bladder, 654
Duckbill speculum, 64
Duckworth, Sir Dyce, on gouty dysmenorrhœa, 566
Duct of Bartholin, Abscess of, 513
——, Gartner's, Dilatation of, 177
——, Müller's, Closure of, 180
Duncan, Matthews, 21
——, ——, on aching kidney, 55
——, ——, on central rupture of perineum, 724
——, ——, on cervix uteri in pregnancy, 587
——, ——, on coccygodynia, 52
——, ——, on dilatation of cervix, 554
——, ——, on dysmenorrhœa, 531
——, ——, on endometritis, 354
——, ——, on enormous fibroids, 848
——, ——, on feeling of fluid, 789
——, ——, on follicular vulvitis, 488
——, ——, on hæmorrhage in young girls, 325
——, ——, on hæmorrhagic parametritis, 278
——, ——, on lupus of vulva, 495
——, ——, on malignant adenoma, 407
——, ——, on parametritis, 271
——, ——, on parametritis in pregnancy, 285
——, ——, on pelvic abscess, 281
——, ——, on perimetric abscess, 210
——, ——, on prolonged pelvic suppuration, 278
——, ——, on senile endometritis, 475
——, ——, on sloughing of fibroid, 426
——, ——, on smallness of bladder, 654, 655
——, ——, on spontaneous dilatation of uterus, 324
——, ——, on sterility, 641
——, ——, on vaginismus, 630, 631
——, ——, value of his teaching, 4
Duncan, W., on absorption of fibroid, 424
Duodenum, ulcer of, Hæmorrhage from, 291
Duration of uterine cancer, 374
Dyschezia, 714
Dysentery and atrophic parametritis, 286
—— and internal hæmorrhage, 292
Dyskinesia, Uterine, 112
Dysmenorrhœa, 531
——, Congestive, 559
——, Intermediate, 567
——, Membranous, 536
——, Neuralgic, 566
——, Obstructive, 533
——, Rheumatic and gouty, 566
Dysmenorrhœa, Ovarian, 559
——, —— pain secondary to, 83
——, Spasmodic, 545
——, ——, and sterility, 644
—— and vaginismus, 630
—— preceding pedicle twisting, 767
Dyspareunia, 627
—— from chronic metritis, 98
—— and sterility, 646
—— from urethral caruncle, 667
Dyspepsia, atonic, Pain in, 55
——, Nervous, 17
Dyspeptic backache, 47
—— headache, 43

E

Early diagnosis of cancer, 374
—— pregnancy, Diagnosis of, 342, 589
Ecchymosis theory of vaginal cysts, 177
Echinococcus cysts, 796
Ecraseur, Use of, in polypus, 337
Ecthyma affecting vulva, 490
Ectopic pregnancy, 324, 859
—— —— causing retention, 693
—— ——, Decidua of, 541
—— ——, Diagnosis of, after death of child, 869
—— —— and metrorrhagia, 324
—— ——, Rupture of, 293
—— ——, Treatment of, after death of child, 869
Eczema and pruritus, 479
—— of vulva, 485
Eden on discharge of decidua from uterus, 297
Edis on nuchal pain with cervical erosions, 458
Effect of treatment in doubtful cancer, 382
Electrical treatment of fibroids, 432
—— —— of imperfect development, 622
Electricity in dysmenorrhœa, 544
—— in superinvolution, 602
Elephantiasis, difference from esthiomène, 498
—— of vulva, 518
Elongation of cervix, 121
—— of infra-vaginal cervix, 127
Embolism, Pulmonary, after ovariotomy, 830
Emmenagogue treatment, 622
Emmett on hypertrophy of labia, 520
—— on oozing tumour of labium, 506
Emmett's operation, 460
"Emphysematous" vaginitis, 451
Enchondroma of clitoris, 521
Encysted peritoneal fluid, 797
Endogenous growth of ovarian tumours, 742
Endometritis, 354, 468
——, Atrophic, 325
—— causing salpingo-oöphoritis, 218
——, Characters of, 354
—— dissecans, 600
——, Fungous or villous, 354
——, Hæmorrhage from, 324
—— from stem pessaries, 162
—— and sterility, 650
Endometrium, Condition of, with fibroids, 421
——, Menstrual changes in, 524
Endothelioma of ovary, 758
Enlargement of uterus with cancer, 403
—— of vaginal orifice, Modes of, 628

Enlargements of Bartholin's gland, 510
Enteric fever and internal hæmorrhage, 291
Enucleation of fibroids, 428
Enuresis, Nocturnal, 655
Epilepsy, menstrual, Spaying for, 596
Epistaxis, Uterine, 299
Ergot for bleeding fibroids, 427
—— in chronic metritis, 102
—— prevents subinvolution, 95
Erosion of cervix, 455
—— —— with retroflexion, 155
—— —— and sterility, 650
——, Granular, diagnosis from cancer, 378
——, Herpetic, 380
—— of urethra, 677
Erotic dreams, 637
—— excitement causing hæmorrhage, 323
Error unavoidable in treating dysmenorrhœa, 531
Erysipelas malignum internum, 278
—— of vulva, 516
Essentials, Surgical, 7
Esthiomène, 494
—— and stricture of rectum, 720
—— causing stricture of urethra, 660
—— and vaginitis, 473
Eucaine in vaginismus, 631
Exalgin in spasmodic dysmenorrhœa, 552
Examination, Abdominal, 61
——, Bimanual, 61
——, —— rectal, 67, 68
——, Preparations for, 60
——, Routine, 59
—— under anæsthesia, 68
——, Vaginal, 62
Exanthemata, Salpingo-oöphoritis following, 222
Exanthematic oöphoritis, 85
Excentric atrophy of uterus, 599
Excision of vulval integument for pruritus, 483
Exercise in chlorosis, 573
—— in neurasthenia, 26
Exfoliative cystitis, 688
Exhaustion, Nervous, and pelvic disease, 12
Exogenous growth of ovarian tumours, 742
Exophthalmic goitre, 576
Expectant treatment of salpingo-oöphoritis, 245
Exploration of bladder, 684
—— of uterus, 347
Exploratory incision, 797
Expulsion of fibroids, 424
Extra-peritoneal hæmatocele, 316
Extroversion of bladder, 702, 713
Eye-strain, Headache from, 42

F

Facies ovarica, 773
Fagge on diabetic pruritus, 480
——, on hysteria, 35
Fæcal fistula after ovariotomy, 830
—— poisoning and chlorosis, 572
—— tumours, Diagnosis of, 844
Fæces, Incontinence of, 722
Fairbairn on soft fibroids, 418
Fallopian tube, Cancer of, 239
—— ——, Disease of the, 71
—— ——, Distension of, taken for oöphoritis, 75
Fallopian tube, Hernia of, 878
—— ——, Myoma of, 240
—— ——, Papilloma of, 257
Family doctor and minor gynæcology, 5
Fatigue and endometritis, 471
——, Hæmorrhage from, 322
—— and vaginitis, 448
Fatty degeneration of fibroids, 839
—— tumour of labium, 511, 518
Fears of women as to disease, 3
Febrile diseases, Endometritis in, 471
—— headache, 41
Feeding after abdominal section, 818
—— in neurasthenia, 22
Feeling of fluid, 789
Fehling on intermediate dysmenorrhœa, 568
Female diseases, Peculiarities of, 2
Fenwick, Dr. S., on tubercular disease of peritoneum, 783
Fergusson's speculum, 62, 63
Fever, Enteric, and internal hæmorrhage, 291
Fibrinous casts of uterus, 539
—— polypus, 349
Fibro-cellular polypus, 466
Fibro-cystic tumours, 840
—— —— and ovarian tumours, Diagnosis between, 789
Fibro-plastic tumours, 410
Fibroid, Intra-pelvic, and pregnancy, 864
——, Obstructive, dysmenorrhœa from, 534
—— pregnancy, 420
——, Production of inversion by, 334, 336
—— resembling cancer, 379
——, Retroverted, 689-692
—— and salpingo-oöphoritis, Diagnosis between, 237
—— of urethro-vaginal septum, 671
Fibroids of abdominal wall, 844
—— adherent in pelvis, 849
——, Bleeding, 416
—— causing perimetritis, 218
—— of cervix, 338
——, Diagnosis from chronic metritis, 99
——, Dysmenorrhœa from, 564
—— and endometritis, 470
—— incarcerated in pelvis, 848
—— and ovarian tumours, Diagnosis between, 788
—— and perimetric abscess, 203
—— with pregnancy, 589
——, Recurrent, 410
—— of round ligament, 879
—— and sterility, 651
——, Subserous, 833
—— of vagina, 182
Fibroma of labium, 518
—— of the ovary, 755
Fibrous thickening of urethra, 660
—— tissue, Aching of, 53
Fidgets, 16
Fissure of rectum, 716
—— of vesical neck, 679
Fistula, Fæcal, after ovariotomy, 830
——, Recto-vaginal, 722, 729
——, vesico-vaginal, Artificial, 683
——, ——, from cancer, 371
Fistulæ, Vaginal, 696
Fit, Hysterical, 35
Fixation, Vaginal, of uterus, 163
——, Ventral, of uterus, 144
Flat foot allied to prolapse, 111

Flatulence after abdominal section, 818
Flatulent distension of belly, 777
Flexion of thigh, in parametritis, 282
—— of uterus and dysmenorrhœa, 533
Floor, pelvic, Physiological descent of, 113
——, ——, Weakness, etc., of, 108
Fluctuation and feeling of fluid, 789
Fluid ring pessary, 160
Flushings at menopause, 593, 597
Fœtal heart sounds, 581
Follicles, Graafian, Enlargement of, 732
——, sebaceous, of vulva, Inflammation of, 484
——, Shotty, on cervix, 379
"Follicular" erosion, 457
—— hæmorrhage into ovary, 299
—— oöphoritis, 224
—— salpingitis, 229, 257
—— vulvitis, 488
Forceps, Speculum, 62
Foreign bodies left in belly, 830
—— —— in bladder, 687
Fothergill, on retained placenta, 348
Fowler, Dr. C. Owen, on ergot in childbed, 96
Fracture bed, 682, 703
—— of coccyx, 52
Fremitus, Hydatid, 796
Frequent micturition, 653
Freund on atrophic parametritis, 286
—— on developmental faults of tubes, 222
—— on hysterectomy, 409
—— on parametritis, 275
—— on tension of pedicle, 765
Fungosities, Uterine, 355
Fungous endometritis, 97, 354
Furuncle of labium, 494, 516

G

Gairdner on ergot for fibroids, 427
Galabin, Case of senile endometritis 475
—— on encysted peritoneal fluid, 797
—— on hæmorrhagic parametritis, 278
Gall bladder, Distended, 796
Galvanic stem, 602
Galvanism in neurasthenia, 25
—— for ovarian pain, 80
Gangrene of fibroids, 424, 836, 838
—— of inverted uterus, 333
—— of polypus, 335
—— of vulva, 504
Garstang on tender red patches in urethra, 676
Gartner, Duct of, 738
——, Dilatation of, 177
Gas cysts, Vaginitis with, 451
Gastralgia, Pain from, 56
Gastric catarrh after abdominal section, 820
—— pain, 55
—— ulcer, 575
—— ——, Pain from, 55
Gastritis, chronic, Pain from, 55
Gastro-intestinal theory of chlorosis, 572
Gauze, iodoform, Arrest of hæmorrhage by, 810
Genital backache, 46
Gervis on gas cysts in cervix, 451
—— on painful sacro-iliac synchondrosis, 50
Giddiness at menopause, 597
Giles, on developmental defects of uterus, 619
——, on vascular tension with menstrual process, 527
——, on vomiting of pregnancy, 588
Girls, Great bleeding in young, 325
Glaevecke on premature menopause, 596
Gland of Bartholin, 508
Glands, inguinal, Inflammation of, 516
Glandular cysts in vagina, 176
—— multilocular ovarian cysts, 744
—— ovarian cysts, 741
Glissement and vaginal fistula, 708
Glycerine, Local depletion by, 562
——, Use of, in chronic metritis, 102
Glycosuria and pruritus, 479
Godson's modification of Zwancke's pessary, 135
Goitre, Exophthalmic, 576
Goldspohn, on incisional hernia, 815
Gonococcus, 445
—— and cystitis, 686
Gonorrhœa causing salpingitis, 218
—— in children, 438
——, "Latent," 219
—— and painful micturition, 663
Gonorrhœal endometritis, 470
—— stricture, 660
—— vaginitis, 444
Gooch on the "irritable uterus," 101
Gourand on splenic tumours, 843
Gout and climacteric hæmorrhage, 328
Gouty dysmenorrhœa, 566
—— vaginitis, 473
Gow on heart disease and menstruation, 323
—— on vaginal secretions, 435
Graafian follicles, Enlargement of, 732
Granular erosions, 456
—— ——, Diagnosis from cancer, 378
—— vaginitis, 449
Gravid uterus, Retroversion of, 690
—— ——, Rupture of, 303
Greenhalgh's pessary, 132
Griffith on discharge of decidua from uterus, 297
—— on parametritis, 268
Griffith, Rhys, on membranous vaginitis, 452
Gross on male sterility, 642
Growth rate of ovarian tumours, 776
Guaiacum in dysmenorrhœa, 542
Gusserow on peritonitis from cancer, 371
Gymnasia in girls' schools, 45

H

Habitual backache, 44
Haeckel on sarcoma of vulva, 502
Hæmatocele, Diagnosis from serous perimetritis, 204
——, Metrorrhagic, 310
——, Pelvic, 307
—— and salpingo-oöphoritis, Diagnosis between, 238
Hæmatocolpos, 604
——, Unilateral, 180
Hæmatoma, 307
—— of round ligament, 831

Hæmatometra, 439, 604, 609
—— from cancer, 370, 373
—— forming a fluctuating tumour, 790
——, Unilateral, 240
Hæmatosalpinx, 232, 313, 439, 606
Hæmorrhage, 320
—— after amputation of cervix, 391
—— from cancer, 370
—— in diagnosis of cancer, 376
—— with early pregnancy, 341
——, Follicular, into ovary, 299
——, Great internal, 290
——, Interstitial, into ovary, 301
—— into ovarian cysts, 743, 762
—— after ovariotomy, 823
—— in ovariotomy, 809
—— without physical signs, 322
—— in Tait's operation, 250
—— in tubal pregnancy, 293
—— from urethral caruncle, 667
——, post-partum, 93
Hæmorrhagic parametritis, 278
Hæmorrhoids, 718
Haig, Dr., on uric acid headache, 38
Hamamelis for bleeding from fibroids, 432
Hard fibroids, 418
Hart, Dr. Berry, on subperitoneal pregnancy, 872, 873
Haultain on uterine fibroids, 417
Head on superficial tenderness, 70
—— on referred headaches, 41
Headache, 37
——, Climacteric, 594, 597
——, Continuous, 40
——, Uric acid, 38
——, Vertical, of neurasthenia, 39
Health resorts in chronic metritis, 105
Heape on menstruation in monkeys, 525
Heart disease and menstruation, 323
——, Fœtal, 581
Hegar's dilators, 343
Helme, Dr. T. A., on uterine involution, 90
Hennig on hydrocele of canal of Nuck, 875
Hepatic tumours, Diagnosis from uterine fibroids, 843
Heredity in cancer, 360
—— in diagnosis of cancer, 375
Hermaphroditism, 624
Hernia of Fallopian tube, 878
——, Incisional, 815
——, Labial, 522
—— of ovary, 876
——, Perineal, 522
——, with prolapse, 129
——, Ventral, 249
Herniæ allied to prolapse, 111
Herpes zoster of labium, 485, 490
Herpetic erosion, 380
Hewitt, F. W., on anæthetics, 7
Hewitt, Graily, cradle pessary, 120
—— on uterine dyskinesia, 112
—— on weakness of pelvic floor, 108
Hicks, Braxton, on bleeding vaginitis, 474
—— on purulent vaginitis, 448
—— on rhythmical uterine contractions, 583
—— on urethral cyst, 675
Hildebrandt on cancer of labium, 500
—— on ergot for fibroids, 427
Hip joint, Abscess bursting into, 281
History, Value of, in diagnosis of cancer, 375
Hodge's pessary, 131
—— ——, Occasional vicious action of, 155
—— —— in retroflexion, 158
Home, Why women cannot rest at, 5
Horrocks, Case of senile endometritis, 475
—— on small meatus urinarius, 659
Hottentot apron, 520
Hughes-Davies's pessary, 136
Hughlings-Jackson, Dr., on arsenic, 27
Huguier on Bartholin's gland, 509
—— on esthiomène, 495
—— on follicular vulvitis, 488
Hunter, Wm., on chlorosis, 572
Hunterian chancre, 491
Hutchinson, Jonathan, on hæmorrhage and gout, 328
——, ——, on lupus of vulva, 495
——, ——, on splitting recto-vaginal septum, 726
Hydatid cysts, 796
—— of Morgagni, Enlargement of, 241
——, Retro-uterine, 693
Hydramnios, 797, 867
Hydrastis canadensis for fibroids, 427
Hydrocele of canal of Nuck, 875
——, Omental, 795
——, Ovarian, 233
Hydronephrosis, Diagnosis of, 792
Hydrops folliculi, 733
Hydrosalpinx, 231
—— and ovarian cysts, Diagnosis between, 793
Hyperæsthesia of sensitive nerves, 16
Hypermetropia, Headache from, 42
Hyperplasia of cervix, 463
——, Chronic areolar, 96
Hyperplastic endometritis, 355, 408
Hyper-secretion of Bartholin's gland, 509
Hypertrophic elongation of cervix, 124
—— polypi, 381, 464
Hypertrophy of cervix, 455, 463
—— —— and sterility, 651
—— of clitoris, 520
——, Infra-vaginal, of cervix, 172
—— of labia, 520
Hypnotics in neurasthenia, 21
Hypochondriasis different from neurasthenia, 12
Hypospadias, 702, 712
Hysterectomy for cancer of body, 409
—— for chorion-epithelioma, 353
—— for fibroids, 431, 851
—— for prolapse, 148
——, with removal of appendages, for salpingo-oöphoritis, 254
——, Vaginal, in salpingo-oöphoritis, 255
——, Vesical fistulæ after, 702
Hysteria, 29
—— and cervical erosion, 458
——, Diagnosis of, 29
——, different from neurasthenia, 12, 33
——, Treatment of, 34
Hysterical pain, 73
—— retention of urine, 32, 689
—— seizures, 18
Hysteropexy, 144

I

Iliac parametritis, 268
Importance of hæmorrhage, 321

Incarcerated fibroids, 848
Incision of cervix for dysmenorrhœa, 552
—— —— and parametritis, 265
——, Exploratory, 797
—— in serous perimetritis, 206
—— in tubercular disease of peritoneum, 785
——, Vaginal, in salpingo-oöphoritis, 253
Incisional hernia, 249, 815
Incompatibility, 641
Incomplete operations for cancer, 392
Incontinence of fæces, 722
—— of urine, 696
Indiarubber tube for drainage, 820
Indications for dilatation, 321
Induration, Fibrous, of Bartholin's gland, 510
Infantile uterus, 621
Infection, bowel, Salpingo-oöphoritis from, 221
Inflammation of Bartholin's gland, 510
——, Characters of, 354
—— of cervix and erosion, 443, 458
——, Pelvic pain of, 53
—— of vulva, 479, 484
Inflammations, Pelvic, 185
Infra-vaginal cervix, Elongation of, 127
—— hypertrophy of cervix, 172
Inguinal cellulitis from malignant disease, 285
—— glands, Inflammation of, 516
—— parametritis, 268
—— ——, Non-puerperal, 285
Insanity after oöphorectomy, 598
——, Climacteric, 594
——, Spaying for, 596
Inspection of vulva, 62
Insufflator, 481
Intermediate dysmenorrhœa, 567
Internal hæmorrhage, 290
Interrogation of patient, 59
Interstitial fibroids, 419
—— hæmorrhage into ovary, 301
—— oöphoritis, 225
——, pregnancy, Rupture of, 306
Intestinal colic, 56
—— obstruction after laparotomy, 251
—— —— after abdominal section, 829
Intra-abdominal hæmorrhage, 292
Intra-peritoneal ectopic pregnancy, 859
Intra-uterine stems for retroflexion, 162
Inversion of bladder, 670
—— of uterus, 107, 330
Involution of uterus, 89
Iodine, Uses of, in chronic metritis, 103
Iodoform gauze packing, 810
Iron in chlorosis, 573
"Irritable uterus," Gooch on, 101
Irritation, Ovarian, 75
——, Reflex, of bladder, 657
Ischio-rectal fossa, Abscess in, 281

J

Jackson, Dr. Hughlings, on arsenic 27
Jaundice and pruritus, 483
Jellinghaus, on rupture of gravid uterus, 304, 306
Jordan, Max, on tubal pregnancy and hernia, 879

K

Kehrer on oöphorectomy, 598
Keith, Thomas, on electrical treatment of fibroids, 432
Kelly, Howard, on inspection of bladder, 684
—— ——, on relaxation of pelvic floor, 110
Kergaradec, Lejumeau de, 582
Kidney, aching, 55
——, Movable, 18, 55
——, ——, Dysmenorrhœa from, 565
——, Pain in, 54
Klebs on general enlargement of uterus, 92
—— on sarcoma of ovary, 758
Klob on chronic enlargement of uterus, 92
Knee-elbow position for sudden retroflexion, 157
Knock-knee allied to prolapse, 111
Kraurosis vulvæ, 632
Kreuznach and chronic metritis, 105

L

Labia, Hypertrophy of, 520
Labial hernia, 522
Labium, Cancer of, 499
——, Fibroma of, 518
——, Furuncle of, 516
——, Herpes zoster of, 485, 490
——, Lipoma of, 518
——, Oozing tumour of, 506
Labour with an ovarian tumour, 774
——, Spurious, 862
Laceration of cervix, 453
—— —— and cancer, 360, 381
—— —— and sterility, 650
—— of pelvic floor, 108
La Chapelle, Madame, on rupture of varicose veins, 298
——, ——, on central rupture of perineum, 724
Lactation after spurious labour, 862
——, Uterine atrophy during, 599
Laminaria tents, 345
Landau and Rheinstein on hæmatosalpinx, 232
Landau on removal of uterus and inflamed appendages, 255
Langdon-Brown, Dr. R., on vulvitis and masturbation, 437
Langton on ovarian hernia, 876
Lardaceous disease from cancer, 373
—— —— from perimetric abscess, 210
—— —— from pyosalpinx, 243
"Latent" gonorrhœa, 219
Lateral curvature of spine allied to prolapse, 111
Laugier on rupture of ovary, 302
Laxatives in perimetritis, 200
Lecorché on diabetes and pruritus, 480
Leeching in chronic metritis, 102
—— the uterus, 563
Left lateral semi-prone position, 64
—— side, Why pain more on, 72
Length of perineum variable, 131
Leopold on adeno-sarcoma of ovary, 757
—— on tumours of round ligament, 880
Leopold's table for raised pelvis position, 804
Leucorrhœa, 434, 443
—— at menopause, 593, 598

Lewers, Dr., on ovarian abscess, 226
——, ——, on parametritis, 266
——, ——, on sarcoma of vulva, 502
——, ——, on ulceration of tube, 231
Ligament, round, Tumours of, 879, 881
Ligature of pedicle, 811
Ligatures, Absorption of, 813
——, After-fate of, 821
——, Suppuration round, 248
Ling's system, 26
Lipoma of Fallopian tube, 241
—— of labium, 518
Lisfranc on amputation of vaginal portion, 384
Lister, Lord, Influence of, on abdominal section, 826
Lithopædion, 870
Littré, Glands of, 674
Liver and backache, 48
——, Cirrhosis of, and internal hæmorrhage, 292
——, Hydatid cyst of, diagnosis, 796
——, Mobility of, 18
Lockwood on operative treatment of peritonitis, 190
Lordosis and phantom tumour, 777
Lumbago, 49
"Lupous" vaginitis, 473
"Lupus minimus," 497
Lupus of vulva, 494
Lutein cysts, 734
Lymphatic theory of vaginal cysts, 177
Lymphatics in cancer, 367

M

Macgregor, Dr. Jessie, 91
——, ——, on arterio-sclerosis, 327
Mackenzie, Sir Stephen, on headache, 40
Mackintosh on dilatation of cervix, 554
Major gynæcology, 1
Male sterility, 642
Malignant adenoma, 355, 362, 406
—— degeneration of fibroids, 840
Mammary signs of pregnancy, 578
Marie, Pierre, on clitoridean crises, 638
——, ——, on vulvo-vaginal crises, 630
Marriage with imperfect development of genitals, 623
—— and ovarian pain, 85
—— in pelvic congestion, 441
—— and spasmodic dysmenorrhœa, 550
Martin, Arthur, on vulvitis in children, 457
Martin, August, on anterior colpotomy, 254
—— on hæmatoma of round ligament, 881
—— operation for fibroids, 431
—— on treatment of kraurosis vulvæ, 635
Massage in atrophic parametritis, 289
—— in neurasthenia, 24
—— for ovarian pain, 80
——, Uterine, 105
Masturbation, 638
—— and ovarian pain, 85
—— and vulvitis, 437
Maurange on senile endometritis, 475
Mayrhofer on pregnancy with absent vagina, 618
McCarthy, case of tumour of round ligament, 881
McClintock on mode of death from fibroids, 838
Measles and endometritis, 471
Mechanical action of pessaries, 130
Mechanism of prolapse, 118
—— of rupture of perineum, 722
Melancholia and amenorrhœa, 575
Melanotic sarcoma of vulva, 502
Membrane, Dysmenorrhœal, 538
Membranous dysmenorrhœa, 536
—— —— and sterility, 652
—— vaginitis, 452
Menopause, 591
——, Delay of preceding cancer, 402
—— delayed by fibroids, 422
——, Effect of, on chronic metritis, 101
Menorrhagia, 321
Menstrual molimina, 597, 622
—— pain, Primary ovarian, 82
—— retention, 603
—— suppression and endometritis, 470
Menstruation, 523
——, absent, 614
——, Bleeding from tubes in, 232
——, Changes in fibroids during, 423
—— and climate, 323
—— with ovarian tumours, 771
—— with salpingo-oöphoritis, 235
——, Suppressed, 569
——, Vicarious, 527, 623
Mercury in membranous dysmenorrhœa, 543
Mesenteric cysts, 794
Metritis, Chronic, 20, 96
——, ——, Dysmenorrhœa from, 565
——, ——, and sterility, 651
Metrorrhagia, 321
Metrorrhagic hæmatocele, 310
Metrostaxis after oöphorectomy, 598
Metrotome, Simpson's, 533
Meyer on hæmatosalpinx, 606
Microbes and chlorosis, 572
——, Cystitis from, 686
Microscopic diagnosis of cancer, 382, 407
Micturition, Pain in, 663
—— —, Too frequent, 18, 653
Migrainous headache, 37
Milton on vesico-vaginal fistula, 704
Minor gynæcology, 1
—— —— and the family doctor, 5
Modes of death from uterine cancer, 373
Mole, Tubal, 308, 309, 310, 861
Molimina, Menstrual, 597, 622
Mollière on ulcers of rectum, 717
Monthly abortion, 536
Morgagni, Enlarged hydatid of, 241
Morning sickness, 588
Morphia in cancer, 396
—— in dysmenorrhœa, 543
Movable kidney, 55
—— ——, Dysmenorrhœa from, 565
—— —— in neurasthenia, 18
Mucous polypus of body of uterus, 355
—— —— of cervix, 455, 466
—— —— of urethra, 671
Müller's duct, Closure of, 180
Multilocular ovarian cysts, 741
Murmurs in chlorosis, 572
Muscles of pelvic floor, 260
Muscular aching, 53
Myo-carcinoma, 363
Myoma of Fallopian tube, 240
—— of ovary, 757
Myomectomy for fibroids, 850
Myorrhaphy, 148
Myo-salpingitis productiva, 228
Myxoma of peritoneum, 761

N

Nabothi, Ovula, 457
Nagel on peri-oöphoritis, 223
Nairne, Stuart, on electrical treatment of fibroids, 433
Napier, Leith, on the menopause, 591
Nasal headache, 42
Natural cure of fibroids, 423
Neisser, Gonococcus of, 445
Nephritis, Chronic, 55
Nerves, sacral, Pressure on, by fibroids, 836
—— in uterine cancer, 373
Nervine stimulants, 27
Nervous causes of amenorrhœa, 575
—— —— of incontinence of fæces, 722
—— disease at climacteric, 594
—— —— and frequent micturition, 654
—— ——, Retention from, 689
—— exhaustion and pelvic disease, 12
—— mimicries, 30
—— symptoms with prolapse, 112
—— weakness, 14
Neugebauer, case of sloughing fibroid, 426
—— on vertical fistulæ, 699
Neugebauer's speculum, 63
Neuralgias, Visceral, 57
Neuralgic dysmenorrhœa, 545, 566
Neurasthenia, 10
—— with atrophic perimentritis, 288
——, Causes of, 13
—— and cervical erosion, 458
—— with chronic metritis, 20, 98, 104
——, Diagnosis of, 19
—— with displacements, 112
——, drugs in, 26
——, Prognosis, 20
—— with salpingo-oöphoritis, 236
——, Symptoms of, 15
——, Treatment of, 20
——, types of patients, 19
——, Vertical headache of, 39
——, what it is, 12
Neurasthenic pain, 71
Neuro-mimesis, 30
——, relation of, to pelvic disease, 32
——, treatment of, 33, 34
Neurotic temperament, 58
New growths of bladder, 687
—— —— of uterus, causing salpingo-oöphoritis, 218
Nocturnal enuresis, 655
Nodular fibroids, 418
Noma, 504
Non-puerperal parametritis, 273
—— inguinal parametritis, 285
Normal secretions, 434
Nuchal pain, with cervical erosions, 458
Nuck, hydrocele of canal of, 875

O

Obesity at menopause, 593, 598
—— and sterility, 648
Obliquity, Posterior, of uterus, 863
Obstruction of bowel from peritonitis, 191
——, Intestinal, after abdominal section, 829
—— by retro-uterine swellings, 716
Obstructive dysmenorrhœa, 533
Obturator foramen, Perforation of, 281
Œdema with cancer of ovary, 760
Old women, Endometritis in, 473
Oldham, Dr., Case of hernial ovary, 528
Olshausen on pedicle twisting, 764, 767
—— on pregnancy in hernial tube, 879
—— on prognosis with ovarian tumours, 776
—— on puerperal oöphoritis, 225
—— on Rokitansky's tumour, 737
Omental cysts, 795
—— tumours, Tubercular, 783
Omentum, Adhesions of, causing pain, 196
——, Hydatid cyst of, diagnosis, 796
Oöphoralgia, 69, 75
Oöphorectomy for cancer, 592
—— in dysmenorrhœa, 544
——, Effect of, on menstruation, 596
—— for fibroids, 430, 849
Oöphoritis, 223
——, Chronic, 69
——, ——, without fixation, 223
——, Supposed enlargement of ovary by, 755
Oozing tumour of labium, 506
Opening of perimetric abscesses, 212
Openshaw, Mr., on parametritis, 279
Operation a cause of neurasthenia, 14
Operative delivery and fistulæ, 701
—— treatment of hæmatocele, 316
—— —— of peritonitis, 190
Opium in peritonitis, 190
Orthmann on kraurosis vulvæ, 633
Osiander on amputation of vaginal portion, 384
Ovarian blood cysts, 300
—— cancer, diagnosis from fibroids, 841
—— ——, diagnosis from serous perimetritis, 203
——, —— —, intra-pelvic, Pregnancy with, 865
—— —— and pregnancy, 866
—— cells, So-called, 743
—— cyst causing retention, 693
—— cysts, diagnosis from fibroids, 842
—— ——, Hæmorrhage into, 762
—— ——, Rupture of, 768
—— ——, Suppuration of, 763
—— dermoids, 749, 751
—— dysmenorrhœa, 559
—— extract, 592
—— fibroma, Diagnosis from uterine, 841
—— hydrocele, 233
—— menstrual pain, primary, 82
—— irritation, 75
—— new growths, 731
—— pain, Chronic, 69, 75
—— pain, Chronic, surgical treatment of, 86
—— ——, from alcohol, 84
—— —— —— sexual causes, 84
—— ——, with retroflexion, 156
—— —— secondary to dysmenorrhœa, 83
—— secretion, 592
—— tumours, 731
—— ——, Clinical history of, 771
—— ——, Diagnosis of, 777
—— ——, Physical signs of, 787
—— —— and pregnancy, 773
Ovaries, Absence of, 615
——, Altered relation of, with fibroids, 422
——, How to feel, 73
——, Imperfect development of, and sterility, 643
——, malignant disease of, and salpingo-oöphoritis, Diagnosis between, 228

Ovaries, Prolapse of the, 86
——, Removal of, in chronic metritis, 105
Ovaritis, chronic, 69, 75
Ovariotomy, 800
—— After-risks of, 823
—— in pregnancy, 775
Ovary, Abscess of, and parametritis, 267
——, Blood cysts of, 299
——, Cancer of, 759
——, Cirrhosis of the, 76
——, Cyst regions of, 732
——, disease of, Hæmatocele from, 308
——, Endothelioma of, 758
——, Fibroma of, 755
——, Follicular hæmorrhage into, 299
——, Hernia of, 876
——, Interstitial hæmorrhage into, 301
——, Myoma of, 757
——, Prolapse of, and painful defæcation, 716
——, Rupture of, 299
——, Sarcoma of, 757
Over-distension of bladder, 655, 689
Over-exertion and endometritis, 471
Overflow from retention of urine, 656
Overgrowths of esthiomène, 497
Over-pressure a cause of neurasthenia, 13
Ovula Nabothi, 457
Ovulation and menstruation, 527
Oxalates in urine, 18

P

Pachy-salpingitis, 228
Pad, Perineal, 117
Paget, Sir James, 34, 276
——, Stephen, on parotitis, 831
Pain in cancer, 370
——, Chronic abdominal, 53
——, —— ovarian, 69
——, —— uterine, 88
—— in diagnosis of cancer, 376
——, Effect of spaying on, 248
——, Hysterical, 73
——, Neurasthenic, 71
——, Paroxysmal, in tubal pregnancy, 296
—— from perimetritis, 195
——, Peritoneal, 69
——, Reflected, 70
——, Relief of, in cancer, 396
Painful defæcation, 714
—— micturition, 663
—— vaginitis, 449
Pajot on ballottement, 585
Palliative treatment of cancer, 394
Palpitation at menopause, 597
Pancreatic cysts, 794
"Pan-hysterectomy," 409, 431, 853
"Papillary" erosion, 457
—— growths in simple ovarian cysts, 734
—— —— in multilocular cysts, 745
—— —— in parovarian tumours, 740
—— ovarian tumours, 746
Papilloma of Fallopian tube, 257
Paquelin's cautery in cancer, 395
Parametritis, 194, 198, 260
—— atrophicans, 286
——, Diagnosis from perimetritis, 198
Paratubal hæmatocele, 294
Parenchymatous oöphoritis, 224
Parent-Duchatelet on hypertrophy of clitoris, 520
Parity, Evidence of, 91
Parotitis after ovariotomy, 831
Parovarian cysts 738
Passive congestion, 322
Patenko's bodies, 756
Pathological relations of prolapse, 111
Pawlik's method of bladder exploration, 684
Péan on splenic cysts, 795
Pectoris, Angina, simulated by neurasthenia, 17
Peculiarities of disease in the female, 2
Pedicle, Bleeding from, 823
——, How to secure, 810
—— of subserous fibroids, Changes in, 836
——, Twisting, 763, 764
Pediculi and pruritus, 478
Pelvic bones and hydatid cysts, 796
—— cellular tissue, 260, 261
—— cellulitis, 260
—— floor, Muscles of, 260
—— ——, Physiological descent of, 113
—— ——, Weakness, etc., of, 108
—— hæmatocele, 307
—— inflammation, Pain of, 53
—— inflammations, 194
—— pain, Hysterical, 32
Pelvis, Fixation of fibroids in, 835
Perforation of pyosalpinx, 242
Perforative peritonitis, 191
Perimetric abscess, 207
Perimetritis, 194, 198, 311
——, diagnosis from parametritis, 198
——, Hæmatocele from, 311
——, Importance of causes of, 215
——, Serous, 197, 202, 781
——, Treatment of, 200
Perineal hernia, 522
—— support, 117
Perinephritic abscess, 280
Perineum, Incomplete rupture of, 141
——, Physiological descent of, 116
——, Rupture of, 722
——, ——, in removing polypus, 337
——, Variable length of, 131
Peri-oöphoritis, 223
Periostitis of coccyx, 52
Peri-salpingo-oöphoritis, 215
Peritoneal adhesions, Absorption of, 147
—— cavity, Hæmorrhage into, 292
——, Chronic, pain, 57, 69
Peritoneo-vaginal hysterectomy, 857
Peritoneum, Cleansing of, 813
——, Drainage of, 815, 819
——, Encysted fluid in, 797
——, Papilloma of, 748
——, Secondary growths in, 760
——, Tubercular disease of, 781
——, uterine, Involution of, 89
—— in uterine cancer, 371
Peritonitis, Acute general, 185
——, ——, Treatment of, 189
——, Dysmenorrhœa from, 565
—— after ovariotomy, 824
——, Pelvic, and painful defæcation, 716
—— from stem pessaries, 162
Peri-tubal hæmatocele, 294
Pessaries, Effect of, in prolapse, 133
——, Intra-uterine, causing salpingo-oöphoritis, 217
——, Materials of, 132
—— and pruritus vulvæ, 479
——, Result of treatment with, 130
Pessary, Cradle, 120
——, Cup and stem, 136
——, Cutter's, 137
——, Hodge's, 131
——, ——, in retroflexion, 158
——, ——, Occasional vicious action of, 155
——, Hughes-Davies's, 136

Pessary, Intra-uterine stem, for retroflexion, 162
——, Ring, 130
——, ——, in retroflexion, 159
——, Zwancke's, 135
Petit on hæmorrhage in tubal pregnancy, 296
Phagedæna, 493
Phenacetin in membranous dysmenorrhœa, 543
—— in spasmodic dysmenorrhœa, 552
Phantom tumours, 777
Phlegmasia dolens after ovariotomy, 830
Phlegmonous erysipelas of pelvic cellular tissue, 277
Phosphates in urine, 18
Phthisis and amenorrhœa, 574
Physiological descent of pelvic floor, 113
Placenta, Disintegrated fibroid resembling, 425
——, ectopic, Attachments of, 861
——, ——, How to deal with, 871
——, Retained, 348
Placental polypus, 349
—— souffle, So-called, 582
Plan of work, 8
Playfair's probe, 459
Plethora, 322
——, Hæmorrhage from, 327
Pointing without bursting of parametric abscess, 279
—— of parametric abscess, Delay in, 279
Polarity, Uterine, 546
Polypoid adenoma, 355
Polypus of bladder, 687
——, Fibrinous, 349
——, Hypertrophic, 381, 464
——, Mucous, 466
——, ——, of urethra, 671
——, Placental, 349
——, Uteri, 329
Porcelain pessary, Aitken's, 136
Position, left lateral semiprone, 65
Posterior colporrhaphy, 141
—— obliquity of uterus, 863
Potassa fusa in cancer, 396
—— ——, Use of, in chronic metritis, 106
Potassium iodide in membranous dysmenorrhœa, 543
Pozzi on bowel infection, 222
—— on "ignipuncture" and resection of painful ovaries, 86
Pregnancy with ascites, 869
—— Cellular tissue in, 263
——, Decidua of ectopic, 541
——, Diagnosis of, 578
——, ——, from chronic metritis, 99
——, early, Diagnosis of, 342
——, Ectopic, 324, 859
——, ——, and metrorrhagia, 324
——, ——, causing retention, 693
——, Effect of, on chronic metritis, 101
——, Hæmorrhage in early, 341
—— and hæmorrhoids, 718
——, Interstitial, 303
—— and intra-pelvic fibroid, 864
—— with intra-pelvic ovarian cyst, 865
—— and ovarian cyst, 865, 866
—— —— tumours, 773
——, Parametritis in, 285
——, Prevention of, 639
—— in rudimentary uterine cornu, 304
——, Rupture of uterus in, 303
——, tubal, Rupture of, 293
—— after ventral fixation of uterus, 147
Pregnancy, Vulval warts in, 506
Premature marriage and sterility, 642
—— menopause, 595
Preparation of cancer for operation, 386
—— for examination, 60
Prepuce, Shrinking of, 634
Pressure effects of large fibroids, 834
—— symptoms from ovarian tumours, 771
—— —— from serous perimetritis, 205
Prevention of backache, 45
—— of pregnancy, 639
—— —— and ovarian pain, 84
Private practice, Examination in, 59
Probe, Playfair's, 459
Procidentia, 126, 456
Profluvium seminis, 646
Progressive suppuration, 278
Prolapse, 107
——, Alexander's operation for, 144
——, Bladder irritation from, 657
——, Conditions resembling, 172
——, Effect of colporrhaphy in, 143
——, Hysterectomy for, 148
——, Mechanism of, 118
—— of ovary and painful defæcation, 716
—— and painful defæcation, 715
—— with polypus, 336
—— of rectum, 719
——, Treatment of, 130
—— of urethral mucous membrane, 669
——, Ventral fixation for, 144
Proliferating salpingitis, 256
"Protean" symptoms, 4, 10
Pruritus ani, 721
—— vulvæ, 477
Psammomata, 747
Pseudo-hermaphroditism, 625
—— -menstruation in febrile diseases, 471
—— -myxoma of peritoneum, 761
Ptomaines and chlorosis, 572
Pubo-vesical cellulitis, 284
Puerperal atrophy of uterus, 92, 599
—— endometritis, 468
—— insanity, 3
—— parametritis, 268
—— peritonitis, 192
—— retention of urine, 689
—— vaginitis, 443
Puerperium, Douches in, 216
Pulmonary embolism after ovariotomy, 830
Pulsating aorta, 17
Puncture, depletion by, 563
Purgation in peritonitis, 187, 190
Purulent vaginitis, 448
Pus, Absorption of, 207
Pustular vaginitis, 450
Pyelitis, 660
——, Pain from, 55
—— from retroverted gravid uterus, 691
Pyometra from cancer, 370, 373
Pyo-salpinx, 250
—— from stem pessaries, 162

R

Raised pelvis position, 804
Ramsbotham, case of perforation of the uterus, 405
—— on mammary signs of pregnancy, 579
Raynaud's disease, 577
Recamier and the speculum, 456
Rectal backache, 47
—— bimanual examination, 67

Rectocele, 118
——, Colporrhaphy in, 144
——, Diagnosis of, 129
Recto-vaginal examination, 67
—— fistula, 722
Rectum, abscess connected with, 517
——, Cancer of, 719
——, Compression of, by retro-uterine swellings, 716
——, Congestion of, and painful defæcation, 715
——, Disease of, and atrophic parametritis, 285
——, Escape of ligatures into, 822
——, Fissure of, 716
——, Over-sensitiveness of, with vaginismus, 629
——, Pressure on, by fibroids, 836
——, Prolapse of, 719
——, Stricture of, 716, 720
——, Tubular stricture of, 498
—— in uterine cancer, 372
Recurrence of inflammation after Tait's operation, 248
Recurrent fibroids, 184, 410
Red patches on cervix, 379
—— —— in urethra, 675
Referred headache, 41
Reflected pain, 70
Reflex effects of uterine disease, 43
—— irritation of bladder, 657
—— symptoms, So-called, 4
Reflux from uterus into tubes, 310
Relative sterility, 641
Relaxation of pelvic floor, 110
Remote parametritis, 282
—— perimetritis, 209
—— symptoms without local, 5
Removal of bleeding fibroids, 428
Renal backache, 48
—— disease, Headache from, 39
—— —— and ovariotomy, 800
—— pain, 54
—— tumours, diagnosis from uterine fibroids, 843
Reopening abdomen after abdominal section, 824
Repair of perineum, 726
Repositor, Aveling's, for inverted uterus, 332
Reproduction a cause of neurasthenia, 13
——, Strain from, 3
Reproductive function, Importance of, to women, 2
Residence, Change of, and amenorrhœa, 590
Rest in perimetritis, 200
—— in salpingo-oöphoritis, 244
Retained secundines, 348
Retention of menses, 603
—— of urine, 32, 689
—— —— from cancer, 371
—— —— causing cystitis, 686
—— ——, Overflow from, 656
Retraction, Uterine, after menstruation, 527
Retroflexion, 150
——, with adhesions, 170
——, causing hæmorrhage, 323
——, Dysmenorrhœa from, 565
—— and endometritis, 471
—— and painful defæcation, 715
—— and sterility, 650
——, Treatment of acute, 157
——, —— chronic, 158
Retro-uterine hydatid, 693
—— swellings, causing retention of urine, 689
—— —— Obstructing bowel, 716
Retroversion, 150
Retroversion of fibroid uterus, 689—692
—— of gravid uterus, 690
Rheinstein and Landau on hæmatosalpinx, 232
Rheumatic dysmenorrhœa, 566
—— headache, 40
Rhythmical uterine contractions, 583
Rigby on gouty dysmenorrhœa, 566
Ring pessary, 130
—— —— in retroflexion, 158
Rokitansky on pedicle twisting, 764
Rokitansky's tumour, 736
Roper's speculum, 64
Rosthorn, Von, on symptoms of salpingo-oöphoritis, 235
Rotter on pancreatic cysts, 794
Round ligament, Tumour of, 879
Routine examination, 59
Rudimentary uterine cornu, Pregnancy in, 304
—— uterus, 617
Ruge and Veit on cancer, 402, 407
—— —— on granular erosion, 456
Rupture of bladder, 691
—— of gravid uterus, 303
—— of hæmatosalpinx, 611
—— of an interstitial pregnancy, 306
—— of ovarian cysts, 301, 768
—— of perineum, 722
—— of tubal pregnancy, 292
—— of varicose veins, 298

S

Sacro-iliac synchondrosis, Pain in, 50
Sacro-sciatic notch, Abscess pointing in, 276
Sacto-salpingitis, 229
Saline infusion in peritonitis, 827
Salpingitis causing perimetric abscess, 208
—— in children, 438
——, Follicular, 229, 257
—— hæmorrhagica, 232
—— and metrorrhagia, 324
Salpingo-oöphoritis, 78, 215, 227
——, Diagnosis from fibroids, 841
——, Dysmenorrhœa from, 565
—— and sterility, 652
Sänger on cystic tumours of tube, 242
—— on pruritus vulvæ, 477
—— on tumour of round ligament, 879
—— on unilateral hæmatometra, 240
Sansom, Dr., case of hystero-epilepsy, 567
Sarco-carcinoma, 363
Sarcoma of cervix, 339, 393
—— and endometritis, 470
—— of Fallopian tube, 242
——, Melanotic, of vulva, 502
—— of ovary, 757
—— of urethro-vaginal septum, 671
—— of uterus, 410, 790, 842
—— of vagina, 184
Sarcomatous degeneration of fibroids, 840
Savage on neuroses of climacteric, 594
Scanzoni on bursting of ovarian blood cyst, 303
—— on chronic metritis, 103
—— on membranous dysmenorrhœa, 536
—— on rupture of varicose veins, 298
Schatz on injuries to the pelvic floor, 109
Schröder on amputation of cervix, 384
Schröder's operation, 463
Schüller's glands, 674
Schultze's views on displacements, 171
Scirrhus of ovary, 759

Sclero-cystic disease, 76
—— ——, relation to cirrhosis, 77
Sclerosis, insular, Retention from, 689
Scott, Mr. John, on spurious labour, 862
Scraping of cancer, 395
Sebaceous follicles of vulva, Inflammation of, 484
Secondary dysmenorrhœa, 564
—— growths in cancer, 368
—— —— in peritoneum, 760
—— vaginismus, 631
Secretion, Ovarian, 592
Secretions, Normal, 434
Secundines, Retained, 348
Semb on endometritis with fibroids, 422
Semon, Sir F., on climacteric neuroses, 594
Senile endometritis, 474
—— pruritus, 482
Septic cystitis, 686
—— peritonitis, 192
—— poisoning after amputation of cervix, 391
—— —— and parametritis, 264
Septic poisoning causing salpingitis, 216
Septum of vagina, 605
Sequestration dermoids, 750
Serous perimetritis, 197, 202, 781
—— —— causing retention, 693
Sessile thin-walled colloid cysts, 744
Sexual abuses, 638
—— causes of ovarian pain, 84
—— excitement, Hæmorrhage from, 322
—— feeling, Anomalies of, 635
—— —— and fertility, 647
—— function, Effect of spaying on, 598
—— functions in neurasthenia, 19
—— relations and endometritis, 471
Shock, Abdominal, 188
——, Hæmorrhage from, 322
—— after ovariotomy, 823
——, Premature climacteric from, 596
Shotty follicles on cervix, 379
Sickness, Morning, 588
Simple ovarian cysts, 733
Simpson, Sir James, on cancer of body of uterus, 405
—— on galvanic stem, 602
—— on gouty dysmenorrhœa, 566
—— on incision of cervix, 553
—— on superinvolution, 599, 601
Simpson's metrotome, 533
Sims, Marion, speculum of, 64
—— on sterility, 647, 651
—— on treatment of cancer, 395
—— on vaginismus, 629, 631
—— on vesico-vaginal fistula, 704
Sinus formation after Tait's operation, 249
Skene on lacerations of the pelvic floor, 109
—— on senile endometritis, 474
Skene's glands, 674
Skin disease at menopause, 593
Slaviansky on oöphoritis, 224
Sleeplessness in neurasthenia, 15, 21
Sloughing, Annular, of genital canal, 699
—— of fibroids, 425, 838
——, Parametritis with, 286
Smallness of bladder, 654
Smith, Eustace, on cannabis indica, 328
Soft chancre, 492
—— fibroids, 418
Softening of cervix, 586
—— of fibroids, 838
Solid abdominal tumours, 833
—— ovarian tumours, 755
Souffle, Uterine, 581
——, ——, in ectopic pregnancy, 860
Sound, Use of, in diagnosis of retroflexion, 153
——, Uterine, 65
Spasm of sphincter ani, 717
Spasmodic dysmenorrhœa, 545
—— —— and sterility, 644
Spaying in chronic metritis, 105
—— for dysmenorrhœa, 544
——, effect on sexual function, 598
—— for epilepsy, 595
—— for insanity, 595
——, krausosis following, 634
—— in neuralgic dysmenorrhœa, 567
—— for salpingo-oöphoritis, 247
—— for spasmodic dysmenorrhœa, 558
Specialism in abdominal surgery, 6
Specula, Celluloid, 63
Speculum, Barnes' crescent, 63
——, Duckbill, 64
——, Fergusson's, 62, 63
—— forceps, 62
——, Introduction of, 456
——, Neugebauer's, 63
——, Roper's, 64
——, Urethral, 685
Sphincter ani, Dilatation of, 717
—— ——, Division of, 717
Spiegelberg on sarcoma of ovary, 757
Spiegelberg's sign of cancer, 380
Spinal caries, 50
Spine, Lateral curvature of, allied to prolapse, 111
Splenic cysts, 795
—— tumour, Tubercular, 783
—— tumours, Diagnosis from uterine fibroids, 843
Sponge, "Tell-tale," 817
—— tents, 345
Spontaneous dilatation of uterus, 324
Spurious labour, 862
Squamous-celled carcinoma, 362
Stem, galvanic, 602
—— pessaries causing salpingo-oöphoritis, 217
Stems, Intra-uterine, for dysmenorrhœa, 557
—— —— for retroflexion, 162
—— —— for sterility, 645
—— —— for superinvolution, 602
Stenosis of cervix and dysmenorrhœa, 533
—— and endometritis, 471
—— and sterility, 644
Sterility, 641
—— and membranous dysmenorrhœa, 538
Sterilisation of cervical canal, 853
Stimson on ligature of uterine arteries, 852
Stimulants, Nervine, 27
Stinking discharge in cancer, 370
Stitches, Removal of, 818
Stitch-hole abscesses, 816
Stolz on cervix uteri in pregnancy, 587
Stomach, Descent of, 18
——, Pain from, 56
——, Ulcer of, 575
——, —— ——, Hæmorrhage from, 291
Stone in bladder, 687
Strain, Backache from, 49
—— from reproduction, 3
Strangulation of kidney, 55
Strapping after abdominal section, 819

Strassman on peritonitis pseudo-myxomatosa, 761
Streptococcus pyogenes, 216
Stretching of sphincter ani, 717
Stricture of rectum, 716, 720
—— of urethra, 659
Strictures from esthiomène, 498
Subinvolution, 92, 93, 324
——, Diagnosis from pregnancy, 589
—— and metrorrhagia, 324
——, treatment of, 95
—— of vagina, 95
Submucous fibroids, 330, 419
Subperitoneal fibroids, 419, 847
—— pregnancy, 863
Subserous fibroids, 833
Sudden retroflexion, 156
Superficial tenderness, with ovarian pain, 70
Superinvolution, 92, 599
Suppression of menstruation, 569
Suppurated urethral cysts, 674
Suppuration of dermoids, 753
—— of fibroids, 838
—— of hydatid cysts, 796
—— of ovarian cysts, 763
Suppurative perimetritis, 197
Supra-vaginal amputation of cervix, 384
Surgical essentials, 7
—— treatment of hæmatocele, 315
—— —— of ovarian pain, 86
Sutton, H. G., 26
——, ——, on the "fibrous type," 550
Sutton, J. Bland-, *see* Bland-Sutton
Sweating at menopause, 593, 597
Swellings of vulva, 506
Symonds, Charters, case of shrinking of prepuce, 634
Symptoms, "Protean," 10
——, Remote, without local, 5
——, Supposed reflex, 4
Syphilis of Fallopian tube, 222
——, Lesions of, 493
Syphilitic condylomata, 494
—— headache, 40
—— stricture of rectum, 720
Synchondrosis, Sacro-iliac pain in, 50
Syncytium, The, 541

T

Tabes dorsalis, Retention in, 689
Table, Daggett's, 64
Tait, Lawson, on chronic metritis, 104
——, ——, on developmental faults of tubes, 222
——, ——, on non-absorption of ligatures, 821
——, ——, operation for ruptured perineum, 726
——, ——, on pedicle twisting, 764
——, ——, on relation between hydro- and pyosalpinx, 233
——, ——, on removal of tubes and ovaries, 251
——, ——, on sessile thin-walled colloid cysts, 744
——, ——, on vascular degeneration of vulva, 632
—— operation, 247, 250
Tapping, 780
——, Bleeding and suppuration from, 763
—— ovarian cyst, 806
—— —— tumour with pregnancy, 775
—— in serous perimetritis, 206
Targett on ovarian abscess, 226
Tay, Mr. Waren, on splitting recto-vaginal septum, 726
Tearing of pelvic floor, 108
"Tell-tale" sponge, 817
Temperament, Neurotic, 58
Temporary amenorrhœa, 590
Tenaculum, 65, 66
Tender patches in urethra, 675
Tenderness, Superficial, with ovarian pain, 70
Tents, 345
——, Behaviour of cancer with, 380
—— causing salpingo-oöphoritis, 217
—— in dysmenorrhœa, 555
—— and parametritis, 265
Tetanus after abdominal section, 830
Theories of disease in hysterical patients, 33
Thin, Dr., on histology of lupus, 495
Third ovary, Supposed, 530, 597
Thirst after abdominal section, 828
Thomas, Dr. Gaillard, on chronic areolar hyperplasia, 96
Thomas, Thelwall, on hernia of Fallopian tube, 878
Thompson, Sir H., on nocturnal enuresis, 656
Thornton, Knowsley, on pedicle twisting, 764
Thure-Brandt on massage, 105
Thyroid extract in amenorrhœa, 577
—— —— for cancer, 592
Tilt on the menopause, 592
Toilette of peritoneum, 813
Torsion, Removal of polypus by, 337
Towers-Smith on obesity and sterility, 648
Toxic headache, 41
Toxins in sarcoma of vulva, 503
Transplantation for vesico-vaginal fistula, 708
Traumatic abscess of labium, 517
Treatment, Effect of, in doubtful cancer, 382
Trendelenburg position, 804
Treves, Sir Frederick, removal of uterus by, 838
Tropics, menstruation in, 523
Tubal abortion, 294, 869
—— inflammation taken for ovarian, 75
—— mole, 308, 309, 310, 861
—— pregnancy, Rupture of, 293
Tube, Fallopian, Papilloma of, 257
Tubercle of bladder, 686, 687
Tubercular disease of peritoneum, 781
—— salpingitis, 219
—— ulceration of bowel and internal hæmorrhage, 292
Tuberculosis of uterus, 413
Tubo-ovarian cysts, 734
Tubular stricture of rectum, 720
Tubulo-dermoids, 750
Tumour, cerebral, Headache of, 39
Tumours, Abdominal, 731
—— of labium, 518
——, Solid abdominal, 833
Twin pregnancy, Hydramnios with, 867
Twisting of ovarian pedicle, 763, 764

U

Ulcer, Corroding, of uterus, 396
—— of duodenum, Hæmorrhage from, 291
——, gastric, Pain from, 55
—— of stomach, 575
—— ——, Hæmorrhage from, 291

Ulceration of cancer, 377
—— of esthiomène, 495
—— from pessaries, 134
—— from prolapse, 122
—— of rectum, 716
—— of urethra, 677
—— of vulva, 484
Umbilicus, Abscess bursting at, 281
Unilateral hæmatometra, 240
"Unsexing" of patients by salpingo-oöphoritis, 249
"Uræmic fever," So-called, 800
Ureter, Inflammation of, 54
——, Injury of, in amputation of cervix, 391
Ureteral catheter, 666
Uretero-cervical fistula, 697
Ureters, Compression of, in parametritis, 274
—— and uterine cancer, 371
Urethra, Cancer of, 371
——, Chronic congestion of, 672
——, Dilatation of, 681
——, Dislocation of, 658
——, Mucous polypus of, 671
——, Pressure on, by fibroids, 836
——, Stricture of, 659
——, Tender red patches in, 675
——, Varicose veins of, 668
Urethral caruncle, 664
—— cysts, Suppuration of, 674
—— mucous membrane, Prolapse of, 669
—— speculum, 685
Urethro-vaginal septum, Abscess of, 671, 673, 694
——, Fibroid of, 671
——, Sarcoma of, 671
Uric acid headache, 38
Urinals, 703
Urinary fistulæ, 696
Urine, Concentration of, 663
——, Incontinence of, 696
——, Phosphates in, 18
——, Retention of, 32, 689
Urticaria, Pruritus vulvæ from, 479
Uterine body, Changes in, with cancer of cervix, 373
—— contraction, Pain of, 54
—— contractions in ectopic pregnancy, 860
—— descent, Pain of, 53
—— disease and hæmorrhoids, Allingham on, 718
—— displacements, 107
—— dyskinesia, 112
—— fungosities, 355
—— hæmorrhage, 320
—— headache, 37
—— massage, 105
—— pain, Chronic, 88
—— polarity, 546
—— souffle, 581
—— —— in ectopic pregnancy, 860
—— sound, 65, 66
Uterus arcuatus, 620
——, Atresia of, 612
——, Atrophy of, 591
—— bicornis, 620
—— bipartitus, 618
——, Blood supply of, 151
——, Cancer of body of, 400
——, Congestion of, with retroflexion, 151
——, Corroding ulcer of, 396
—— didelphys, 620
——, Extirpation of, for prolapse, 148
——, Imperfect development of, 615
——, —— ——, with ovarian pain, 82
——, —— ——, and sterility, 643
——, Infantile, 621
Uterus, Inversion of, 329
——, Involution of, 69
——, "irritable," Gooch on, 101
——, Normal secretions of, 434
——, Polypus of, 329
——, Posterior obliquity of, 863
——, Puerperal atrophy of, 92, 599
——, Removal of, for salpingo-oöphoritis, 254
——, ——, with appendages, for salpingo-oöphoritis, 255
——, Retroverted gravid, 690
——, Rhythmical contractions of, 583
——, Rupture of gravid, 303
—— septus, 621
——, Spontaneous dilatation of, 324
——, Tuberculosis of, 413
—— unicornis, 618
——, Vaginal fixation of, 163

V

Vagina, Atresia of, 605
——, Contraction of, after oöphorectomy, 598
——, Fibroids of, 182
——, ——, Treatment, 184
——, Normal secretion of, 434
——, Prolapse of, 118
——, Sarcoma of, 184
——, Subinvolution of, 95
—— in uterine cancer, 371
Vaginal cystotomy, 682
—— cysts, 175
—— ——, Origin of, 176
—— ——, Treatment of, 181
—— examination, 62, 113
—— exfoliation, 539
—— fistulæ, 696
—— fixation of uterus, 163
—— ——, how performed, 165
Vaginal hysterectomy in salpingo-oöphoritis, 255
—— incision in salpingo-oöphoritis, 253
—— operation for ectopic pregnancy, 874
—— —— for hæmatocele, 316
—— orifice, Smallness of, 628
—— ——, Tears of, 322
—— ovariotomy in labour, 775
—— pessaries, 130
—— ——, Effects of, 133
—— portion, Cancer of, 364, 377
—— septum, 605
Vaginismus, 629
Vaginitis, 443
—— in children, 438
—— with labial abscess, 516
Vaginal-rectal examination, 67
Varices of vulva, 522
Varicose veins in broad ligament, Rupture of, 298
—— ——, Urethral, 668
Vascular changes during menstruation, 527
—— degeneration of vulva, 632
—— tumour of urethra, 664
Vaso-motor symptoms of neurasthenia, 17
Veins in uterine cancer, 372
——, Varicose, Rupture of, 298
——, ——, Urethral, 668
Veit and Ruge on granular erosion, 456
Ventral fixation, 144
—— —— for retroflexion, 169
—— hernia, 249, 815
Vertical headache of neurasthenia, 16, 38

Vesico-cervical fistula, 698
Vesico-vaginal fistula, 698
—— ——, Artificial, 682
—— —— from cancer, 371
Vessels of uterus after childbearing, 91
Vicarious menstruation, 527, 623
Villi of chorion, Characters of, 541
Villous endometritis, 355
—— growth of bladder, 687
Virchow on parametritis, 278
—— on primary atrophy of uterus, 621
Virgin, Prolapse in, 110
Virgins, Cancer in, 376
——, Leucorrhœa in, 440
——, Salpingitis in, 221
Viscera, Mobility of, 17
Visceral neuralgias, 57
Volsella, 65, 66
Vomiting after abdominal section, 817
—— in peritonitis, 187
—— of pregnancy, 588
—— and uterine disease, 22
Vulva, Disorders of, 477
——, Elephantiasis of, 518
——, Erysipelas of, 516
——, Gangrene of, 504
——, Inflammation and ulceration of, 484
——, Melanotic sarcoma of, 502
——, Secretions of, 435
——, So-called lupus of, 494
——, Varices of, 522
——, Vascular degeneration of, 632
——, Warts of, 506
Vulvæ pruritus, 477
Vulvitis in children, 436
——, Follicular, 488
Vulvo-vaginal crises, 631
—— gland, 508

W

Warts of vulva, 506
Warty growth, Cancer beginning as, 378
Washing out of bladder, 688
—— —— peritoneum, 306, 814
—— —— stomach in peritonitis, 187
Wasting in cancer, 370
—— in diagnosis of cancer, 376
—— at menopause, 593
Weakness, Nervous, 14
Webster, Clarence, on dermoids, 753
—— on pruritus vulvæ, 477
Weir-Mitchell treatment, 25
Weitbrecht on cervix uteri in pregnancy, 587
Wells, Sir Spencer, on ovariotomy, 800
Werth on pseudo-myxoma, 761
Wertheim's operation for cancer, 394
West, Dr., on amenorrhœa with imperfect circulation, 577
West, Dr., on chronic congestion of urethra, 672
——, ——, on chronic metritis, 101
——, ——, on great bleeding in young girls, 325
——, ——, on parametritis, 267
White, Dr. Clement, on hydro-salpinx, 231
"Whites," 443
Widerstein on pregnancy in hernial tube, 879
Wilks, Sir S., on hysteria, 31, 35
Williams, Sir John, on amputation of cervix, 384
——, ——, on cancer and cervical lacerations, 360
——, ——, on cauliflower excrescence, 366
——, ——, on changes in fibroids during menstruation, 423
——, ——, on corroding ulcer, 396
——, ——, on early signs of cancer, 378
——, ——, on laceration of cervix and cancer, 463
——, ——, on membranous dysmenorrhœa, 536
——, ——, on menstruation, 525
——, ——, on ovarian tumours and pregnancy, 733
——, ——, on sterility and ovarian tumours, 640
——, ——, on uterine arteries after childbearing, 91
——, ——, on vascular degeneration of vulva, 632
Williams, Roger, on cancer of uterus, 405
Williams, Whitridge, on tubercle of Fallopian tube, 219
—— ——, on tuberculosis of uterus, 413
Williamson, Herbert, on urethral caruncle, 664
Wilson, Harold, on hæmorrhage into the ovary, 303
Winter on incisional hernia, 815
—— on preparation of cancer for operation, 386
Women, their fear of future disease, 3
——, Importance of reproductive function to, 2
——, their work at home, 5
Woodhall Spa and chronic metritis, 105
Worms and pruritus vulvæ, 479

Y

Young girls, Great bleeding in, 325

Z

Zinc chloride in cancer, 395
Zuckerkandl on hydrocele of canal of Nuck, 875
Zwancke's pessary, 135

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